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<150> JP 2000-116591

<151> 2000-04-18

<150> JP 2000-117458

<151> 2000-04-19

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	gtgaattgga tagtattcct acatactctg ccacgggggt agctgtcagt gtggcctcca	600
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<210> 21
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 <212> DNA
 <213> *Penicillium citrinum*

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<210> 22
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 <213> *Penicillium citrinum*

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 <213> Penicillium citrinum

<400> 29
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		ccttcaact taactgcatt tcgccacaac taactcgacg aggccggcga	300
		tgggtgttac attcatgagc tcaaagatcg acacatcaac atggatttca gatgtgatcc	360
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<213> Penicillium citrinum
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cggatagtag cagctgggaa ag

562

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27

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 Met Ser Glu Pro Leu Pro Pro Lys Glu Gly Glu Pro Arg Pro Gln Lys
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gaa gaa agt caa aat gac acg ctc gaa gcg act gag tcc aag tcc cag 96
 Glu Glu Ser Gln Asn Asp Thr Leu Glu Ala Thr Glu Ser Lys Ser Gln
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cac atc aca ggc ctc aag ctc ggg ctg gtg gtt gct tca gtt act ttc 144
 His Ile Thr Gly Leu Lys Leu Gly Leu Val Val Ala Ser Val Thr Phe
 35 40 45

gta gca ttt ttg atg ctc ctt gat atg tcc att atc gtc acg gca atc 192
 Val Ala Phe Leu Met Leu Leu Asp Met Ser Ile Ile Val Thr Ala Ile
 50 55 60

cca cat atc aca agc gag ttc cac tct ctg aac gat gta ggg tgg tac 240
 Pro His Ile Thr Ser Glu Phe His Ser Leu Asn Asp Val Gly Trp Tyr
 65 70 75 80

ggc agt gct tat ctt ctg gct aac tgt gct ctc cag ccc ctg gcc ggt 288
 Gly Ser Ala Tyr Leu Leu Ala Asn Cys Ala Leu Gln Pro Leu Ala Gly
 85 90 95

aaa ttg tat aca ctc ttg ggc ttg aag tac act ttc ttt gcc ttc ctc 336
 Lys Leu Tyr Thr Leu Leu Gly Leu Lys Tyr Thr Phe Phe Ala Phe Leu
 100 105 110

tgt att ttt gaa cta ggc tcg gtg cta tgc ggt gcc gca aga tct tcc 384
 Cys Ile Phe Glu Leu Gly Ser Val Leu Cys Gly Ala Ala Arg Ser Ser
 115 120 125

acc atg ttg att gtt ggg cgg gcc gtt gct gga atg gga ggc tca ggt 432
 Thr Met Leu Ile Val Gly Arg Ala Val Ala Gly Met Gly Gly Ser Gly
 130 135 140

ctt gtc aac gga gcc ctc aca atc ctc tca aca gct gct cct aag cac 480
 Leu Val Asn Gly Ala Leu Thr Ile Leu Ser Thr Ala Ala Pro Lys His

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145				150				155				160				
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att Ile	gtc Val	tgt Cys	gga Gly 180	cca Pro	ctg Leu	ctc Leu	gga Gly	ggt Gly 185	gct Ala	ttc Phe	act Thr	caa Gln	cac His 190	gcc Ala	act Thr	576
tgg Trp	cga Arg	tgg Trp 195	tgc Cys	ttt Phe	tat Tyr	atc Ile	aat Asn 200	ctc Leu	ccc Pro	atc Ile	ggc Gly	gct Ala 205	gtc Val	gct Ala	gca Ala	624
ttc Phe	ctc Leu 210	ctt Leu	ctc Leu	gtc Val	atc Ile	acc Thr 215	ata Ile	ccc Pro	gac Asp	cga Arg	att Ile 220	tca Ser	tcc Ser	acg Thr	gac Asp	672
agc Ser 225	gaa Glu	ctc Leu	tgc Ser	acc Thr	gac Asp 230	aaa Lys	cca Pro	atg Met	gcc Ala	aac Asn 235	ata Ile	aaa Lys	tcc Ser	aca Thr	ctt Leu 240	720
cgc Arg	aaa Lys	ctg Leu	gac Asp	ctt Leu 245	gta Val	ggc Gly	ttt Phe	gtg Val	gtc Val 250	ttt Phe	gca Ala	gcc Ala	ttc Phe	gca Ala 255	acc Thr	768
atg Met	att Ile	tcc Ser	ctc Leu 260	gca Ala	cta Leu	gaa Glu	tgg Trp	gga Gly	ggg Gly	tgc Ser	acc Thr	tac Tyr	acc Thr 270	tgg Trp	cga Arg	816
agt Ser	tcc Ser	gtc Val 275	atc Ile	atc Ile	ggc Gly	ctg Leu	ttc Phe 280	tgt Cys	ggc Gly	gga Gly	ggg Gly	ttt Phe 285	gct Ala	ctg Leu	att Ile	864
gcg Ala	ttc Phe 290	gtg Val	cta Leu	tgg Trp	gag Glu	cgt Arg 295	cat His	gtt Val	ggc Gly	gat Asp	gct Ala 300	gtt Val	gcc Ala	atg Met	att Ile	912
cct Pro 305	ggc Gly	tca Ser	gtg Val	gct Ala	ggt Gly 310	aaa Lys	cga Arg	caa Gln	gtg Val	tgg Trp 315	tgc Cys	tct Ser	tgt Cys	tta Leu	ttt Phe 320	960
atg Met	ggc Gly	ttt Phe	ttc Phe	tct Ser 325	ggc Gly	tcc Ser	ttg Leu	ctt Leu	gtc Val 330	ttt Phe	tcc Ser	tac Tyr	tat Tyr	cta Leu 335	ccg Pro	1008
atc Ile	tac Tyr	ttc Phe	cag Gln 340	gct Ala	gtg Val	aag Lys	gat Asp	gtt Val 345	tct Ser	ccc Pro	aca Thr	ctg Leu	agt Ser	ggt Gly	gtg Val	1056
tac Tyr	atg Met	ttg Leu 355	cct Pro	gga Gly	att Ile	ctt Leu	gga Gly 360	caa Gln	gtc Val	att Ile	atg Met	gct Ala 365	atg Met	gtt Val	tct Ser	1104
ggc Gly	ttc Phe 370	gca Ala	att Ile	gga Gly	aag Lys	aca Thr 375	gga Gly	tac Tyr	tat Tyr	ttg Leu	cct Pro 380	tgg Trp	gcc Ala	cta Leu	ggc Gly	1152
agc Ser 385	gct Ala	gtt Val	ctc Leu	gtc Val	gcc Ala 390	ata Ile	ggc Gly	gca Ala	ggt Gly	ctg Leu 395	gta Val	tcc Ser	acc Thr	ttc Phe	cag Gln 400	1200
ccc Pro	cat His	aca Thr	tca Ser	act Thr 405	gtg Val	aaa Lys	tgg Trp	gtc Val	atg Met 410	tac Tyr	caa Gln	ttt Phe	atc Ile	gcg Ala 415	ggc Gly	1248
ttc Phe	ggt Gly	cgt Arg	ggt Gly 420	tgt Cys	ggc Gly	atg Met	caa Gln	acg Thr 425	cct Pro	atc Ile	atc Ile	gcc Ala	atc Ile 430	caa Gln	agc Ser	1296

acg ctt tcg ccc gaa caa ggt gcc ctc gga att tct ctc gcc gtg ttt 1344
 Thr Leu Ser Pro Glu Gln Gly Ala Leu Gly Ile Ser Leu Ala Val Phe
 435 440 445

gga cag acg ttt gga gga tcg ctc ttc ctg gac ttt gct aac ctt gtc 1392
 Gly Gln Thr Phe Gly Gly Ser Leu Phe Leu Asp Phe Ala Asn Leu Val
 450 455 460

ttt ggg tcc ggt ttg aga act ggc ctg agc aag tat gcg ccc act gtc 1440
 Phe Gly Ser Gly Leu Arg Thr Gly Leu Ser Lys Tyr Ala Pro Thr Val
 465 470 475 480

gac acg cag gcc gtg acg gca gca ggg gcg act ggc ttc aga gat gtg 1488
 Asp Thr Gln Ala Val Thr Ala Ala Gly Ala Thr Gly Phe Arg Asp Val
 485 490 495

gtc agc aag aat aac ctt cca ggg gtt gta aaa gct tac agt ctc gcc 1536
 Val Ser Lys Asn Asn Leu Pro Gly Val Val Lys Ala Tyr Ser Leu Ala
 500 505 510

gtt gat cat act ttt tac tta gca gtg gga gct acg gcg tgc acg ttt 1584
 Val Asp His Thr Phe Tyr Leu Ala Val Gly Ala Thr Ala Cys Thr Phe
 515 520 525

gtg ttt gcc ttt gga atg gga tgg cgg aag att gca acc aaa aac gac 1632
 Val Phe Ala Phe Gly Met Gly Trp Arg Lys Ile Ala Thr Lys Asn Asp
 530 535 540

acc cgg gct gtg cct gag act gat gct tga 1662
 Thr Arg Ala Val Pro Glu Thr Asp Ala
 545 550

<210> 38
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 <212> PRT
 <213> Penicillium citrinum

<400> 38

Met Ser Glu Pro Leu Pro Pro Lys Glu Gly Glu Pro Arg Pro Gln Lys
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Glu Glu Ser Gln Asn Asp Thr Leu Glu Ala Thr Glu Ser Lys Ser Gln
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His Ile Thr Gly Leu Lys Leu Gly Leu Val Val Ala Ser Val Thr Phe
 35 40 45

Val Ala Phe Leu Met Leu Leu Asp Met Ser Ile Ile Val Thr Ala Ile
 50 55 60

Pro His Ile Thr Ser Glu Phe His Ser Leu Asn Asp Val Gly Trp Tyr
 65 70 75 80

Gly Ser Ala Tyr Leu Leu Ala Asn Cys Ala Leu Gln Pro Leu Ala Gly
 85 90 95

Lys Leu Tyr Thr Leu Leu Gly Leu Lys Tyr Thr Phe Phe Ala Phe Leu
 100 105 110

Cys Ile Phe Glu Leu Gly Ser Val Leu Cys Gly Ala Ala Arg Ser Ser
 115 120 125

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Thr 130	Met	Leu	Ile	Val	Gly	Arg 135	Ala	Val	Ala	Gly	Met 140	Gly	Gly	Ser	Gly
Leu 145	Val	Asn	Gly	Ala	Leu 150	Thr	Ile	Leu	Ser	Thr 155	Ala	Ala	Pro	Lys	His 160
Lys	Gln	Pro	Val	Leu 165	Ile	Gly	Val	Met	Met 170	Gly	Leu	Ser	Gln	Ile 175	Ala
Ile	Val	Cys	Gly 180	Pro	Leu	Leu	Gly	Gly 185	Ala	Phe	Thr	Gln	His 190	Ala	Thr
Trp	Arg	Trp 195	Cys	Phe	Tyr	Ile	Asn 200	Leu	Pro	Ile	Gly	Ala 205	Val	Ala	Ala
Phe	Leu 210	Leu	Leu	Val	Ile	Thr 215	Ile	Pro	Asp	Arg	Ile 220	Ser	Ser	Thr	Asp
Ser 225	Glu	Leu	Ser	Thr	Asp 230	Lys	Pro	Met	Ala	Asn 235	Ile	Lys	Ser	Thr	Leu 240
Arg	Lys	Leu	Asp	Leu 245	Val	Gly	Phe	Val	Val 250	Phe	Ala	Ala	Phe	Ala 255	Thr
Met	Ile	Ser	Leu 260	Ala	Leu	Glu	Trp	Gly 265	Gly	Ser	Thr	Tyr	Thr 270	Trp	Arg
Ser	Ser	Val 275	Ile	Ile	Gly	Leu	Phe 280	Cys	Gly	Gly	Gly	Phe 285	Ala	Leu	Ile
Ala	Phe 290	Val	Leu	Trp	Glu	Arg 295	His	Val	Gly	Asp	Ala 300	Val	Ala	Met	Ile
Pro 305	Gly	Ser	Val	Ala	Gly 310	Lys	Arg	Gln	Val	Trp 315	Cys	Ser	Cys	Leu	Phe 320
Met	Gly	Phe	Phe	Ser 325	Gly	Ser	Leu	Leu	Val 330	Phe	Ser	Tyr	Tyr	Leu 335	Pro
Ile	Tyr	Phe	Gln 340	Ala	Val	Lys	Asp	Val 345	Ser	Pro	Thr	Leu	Ser 350	Gly	Val
Tyr	Met	Leu 355	Pro	Gly	Ile	Leu	Gly 360	Gln	Val	Ile	Met	Ala 365	Met	Val	Ser
Gly	Phe 370	Ala	Ile	Gly	Lys	Thr 375	Gly	Tyr	Tyr	Leu	Pro 380	Trp	Ala	Leu	Gly
Ser 385	Ala	Val	Leu	Val	Ala 390	Ile	Gly	Ala	Gly	Leu	Val 395	Ser	Thr	Phe	Gln 400

48

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gcc Ala	gga Gly 50	tta Leu	agg Arg	tgt Cys	gtg Val	tac Tyr 55	agc Ser	gaa Glu	agg Arg	cta Leu	ccc Pro 60	aag Lys	cgc Arg	aat Asn	tta Leu	192																								
cat His 65	aaa Lys	gaa Glu	gcc Ala	gca Ala	gct Ala 70	gga Gly	act Thr	aca Thr	aga Arg	gcc Ala 75	aca Thr	gaa Glu	acc Thr	tca Ser	caa Gln 80	240																								
ccg Pro	atg Met	acc Thr	gcg Ala	aca Thr 85	tct Ser	tct Ser	acg Thr	gtc Val	ttc Phe 90	tca Ser	tca Ser	ttg Leu	gca Ala	gag Glu 95	act Thr	288																								
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ttg Leu	ttc Phe	atg Met 275	gcg Ala	gtg Val	cat His	tgc Cys	tac Tyr 280	atg Met	ttg Leu	tct Ser	gtc Val	aaa Lys 285	atc Ile	atg Met	aca Thr	864																								

tca ctt tcc cag ctg cta cta tcc gag gtg atg aaa gcc caa cct tgt 912
 Ser Leu Ser Gln Leu Leu Leu Ser Glu Val Met Lys Ala Gln Pro Cys
 290 295 300
 gga caa aag caa agc aca cga atg gat tgg tac tgg tct ggc tca acc 960
 Gly Gln Lys Gln Ser Thr Arg Met Asp Trp Tyr Trp Ser Gly Ser Thr
 305 310 315 320
 act aga aat gac aat gga aga gcc gaa gca ctt ccc tcg ttt cac tct 1008
 Thr Arg Asn Asp Asn Gly Arg Ala Glu Ala Leu Pro Ser Phe His Ser
 325 330 335
 aat ctt cat atc ggc gag ctc att tca cat ctc gac cca ttc atg cac 1056
 Asn Leu His Ile Gly Glu Leu Ile Ser His Leu Asp Pro Phe Met His
 340 345 350
 gcc tta tct tct gca tgc acg aca ttg cgt gta agc ctt cga cta ttg 1104
 Ala Leu Ser Ser Ala Cys Thr Thr Leu Arg Val Ser Leu Arg Leu Leu
 355 360 365
 agt gag att gag act gct ttg ggg ata gca cag gag cac ggg gct gcg 1152
 Ser Glu Ile Glu Thr Ala Leu Gly Ile Ala Gln Glu His Gly Ala Ala
 370 375 380
 gca tct att cgt cta gtc cta tca gat atg cca agc aca tcg tgg caa 1200
 Ala Ser Ile Arg Leu Val Leu Ser Asp Met Pro Ser Thr Ser Trp Gln
 385 390 395 400
 atc ctt ggc gct gaa aat aaa acc ata acg ccg gcc tct cgt ctc cta 1248
 Ile Leu Gly Ala Glu Asn Lys Thr Ile Thr Pro Ala Ser Arg Leu Leu
 405 410 415
 tct gtg ctt tgg agt gac gaa gcc gga gac gaa gag ccc aag tca aca 1296
 Ser Val Leu Trp Ser Asp Glu Ala Gly Asp Glu Glu Pro Lys Ser Thr
 420 425 430
 aag gcc tca ggg aag acg ata aat gtg ttg cga cgt tgc tat aag gaa 1344
 Lys Ala Ser Gly Lys Thr Ile Asn Val Leu Arg Arg Cys Tyr Lys Glu
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 ata ttc gca tta gcg aag aaa cac aat att gct tag 1380
 Ile Phe Ala Leu Ala Lys Lys His Asn Ile Ala
 450 455

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 <212> PRT
 <213> Penicillium citrinum

<400> 42

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Phe Arg Arg Ser Cys Asp Arg Cys His Ala Gln Lys Leu Lys Cys Thr
20 25 30

Gly Ser Asn Ala Asn Leu Val Arg Ala Gln Cys Gln Arg Cys Gln Gln
35 40 45

Ala Gly Leu Arg Cys Val Tyr Ser Glu Arg Leu Pro Lys Arg Asn Leu
50 55 60

His Lys Glu Ala Ala Ala Gly Thr Thr Arg Ala Thr Glu Thr Ser Gln
65 70 75 80

0936705-041701

Asn Leu His Ile Gly Glu Leu Ile Ser His Leu Asp Pro Phe Met His
340 345 350

Ala Leu Ser Ser Ala Cys Thr Thr Leu Arg Val Ser Leu Arg Leu Leu
355 360 365

Ser Glu Ile Glu Thr Ala Leu Gly Ile Ala Gln Glu His Gly Ala Ala
370 375 380

Ala Ser Ile Arg Leu Val Leu Ser Asp Met Pro Ser Thr Ser Trp Gln
385 390 395 400

Ile Leu Gly Ala Glu Asn Lys Thr Ile Thr Pro Ala Ser Arg Leu Leu
405 410 415

Ser Val Leu Trp Ser Asp Glu Ala Gly Asp Glu Glu Pro Lys Ser Thr
420 425 430

Lys Ala Ser Gly Lys Thr Ile Asn Val Leu Arg Arg Cys Tyr Lys Glu
435 440 445

Ile Phe Ala Leu Ala Lys Lys His Asn Ile Ala
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Gly Cys Arg Phe Pro Gly Gly Val Asn Thr Pro Ser Lys Leu Trp Glu
20 25 30
ctg ctc aaa gag ccc cgg gat gta cag acc aag atc cct aag gag aga 144
Leu Leu Lys Glu Pro Arg Asp Val Gln Thr Lys Ile Pro Lys Glu Arg
35 40 45
ttt gac gtc gat aca ttt tac agc ccc gat ggc act cac ccc ggg cgc 192
Phe Asp Val Asp Thr Phe Tyr Ser Pro Asp Gly Thr His Pro Gly Arg
50 55 60
acg aac gca ccc ttt gca tac ttg ctg cag gag gat cta cgc ggt ttt 240
Thr Asn Ala Pro Phe Ala Tyr Leu Leu Gln Glu Asp Leu Arg Gly Phe
65 70 75 80
gat gcc tct ttc ttc aac atc caa gct gga gag gcc gaa acg att gac 288
Asp Ala Ser Phe Phe Asn Ile Gln Ala Gly Glu Ala Glu Thr Ile Asp
85 90 95
cca cag caa agg ctg ctg ctg gag acg gtc tat gaa gct gta tcc aac 336
Pro Gln Gln Arg Leu Leu Leu Glu Thr Val Tyr Glu Ala Val Ser Asn
100 105 110
gca ggc cta cgg atc caa ggc ctt caa gga tcc tct act gct gtg tac 384
Ala Gly Leu Arg Ile Gln Gly Leu Gln Gly Ser Ser Thr Ala Val Tyr
115 120 125

00365705-044704

gtc Val 130	ggt Gly 130	atg Met 130	atg Met 130	acg Thr 130	cat His 130	gac Asp 135	tat Tyr 135	gag Glu 135	act Thr 135	atc Ile 135	gtg Val 140	acg Thr 140	cgt Arg 140	gaa Glu 140	ttg Leu 140	432
gat Asp 145	agt Ser 145	att Ile 145	cct Pro 145	aca Thr 150	tac Tyr 150	tct Ser 150	gcc Ala 150	acg Thr 150	ggg Gly 155	gta Val 155	gct Ala 155	gtc Val 155	agt Ser 155	gtg Val 160	gcc Ala 160	480
tcc Ser 165	aac Asn 165	cgt Arg 165	gta Val 165	tca Ser 165	tac Tyr 165	ttc Phe 165	ttc Phe 165	gac Asp 170	tgg Trp 170	cat His 170	ggg Gly 170	ccg Pro 170	agt Ser 175	atg Met 175	acg Thr 175	528
atc Ile 180	gac Asp 180	aca Thr 180	gcc Ala 180	tgt Cys 180	agt Ser 180	tca Ser 185	tcc Ser 185	tta Leu 185	gct Ala 185	gcc Ala 185	gtg Val 185	cat His 190	ctg Leu 190	gcc Ala 190	gtc Val 190	576
caa Gln 195	cag Gln 195	ctt Leu 195	aga Arg 195	acg Thr 195	ggc Gly 195	gag Glu 200	agt Ser 200	acc Thr 200	atg Met 200	gcg Ala 200	ggt Val 200	gca Ala 205	gcc Ala 205	ggg Gly 205	gcg Ala 205	624
aat Asn 210	ctg Leu 210	ata Ile 210	ttg Leu 210	ggc Gly 210	ccc Pro 215	atg Met 215	acc Thr 215	ttt Phe 215	gta Val 215	atg Met 220	gag Glu 220	agc Ser 220	aaa Lys 220	ttg Leu 220	aac Asn 220	672
atg Met 225	ctg Leu 225	tcc Ser 225	ccc Pro 225	aat Asn 230	ggg Gly 230	aga Arg 230	tct Ser 230	cga Arg 230	atg Met 235	tgg Trp 235	gat Asp 235	gct Ala 235	gct Ala 235	gcc Ala 240	gat Asp 240	720
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acc Thr 275	ggg Gly 275	atc Ile 275	aac Asn 275	caa Gln 275	gat Asp 275	ggc Gly 280	cga Arg 280	acg Thr 280	aca Thr 280	ggg Gly 280	atc Ile 285	aca Thr 285	atg Met 285	cca Pro 285	aac Asn 285	864
cat His 290	agc Ser 290	gca Ala 290	caa Gln 290	gaa Glu 290	gcc Ala 295	ctc Leu 295	att Ile 295	cgg Arg 295	gcc Ala 295	aca Thr 300	tat Tyr 300	gcc Ala 300	aag Lys 300	gct Ala 300	ggg Gly 300	912
ctt Leu 305	gat Asp 305	att Ile 305	acc Thr 305	aac Asn 310	ccc Pro 310	cag Gln 310	gaa Glu 310	cgc Arg 310	tgc Cys 310	cag Gln 315	ttc Phe 315	ttt Phe 315	gaa Glu 315	gcc Ala 320	cat His 320	960
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aca Thr 340	gcc Ala 340	ttc Phe 340	ttc Phe 340	gga Gly 340	cac His 340	aag Lys 340	gat Asp 345	gga Gly 345	aca Thr 345	atc Ile 345	gac Asp 345	agc Ser 350	gac Asp 350	ggc Gly 350	gag Glu 350	1056
aaa Lys 355	gat Asp 355	gag Glu 355	ctt Leu 355	ttt Phe 355	gtc Val 355	ggc Gly 360	agc Ser 360	atc Ile 360	aag Lys 360	aca Thr 360	gtt Val 365	ctc Leu 365	ggg Gly 365	cac His 365	acg Thr 365	1104
gaa Glu 370	ggc Gly 370	act Thr 370	gct Ala 370	ggg Gly 370	att Ile 375	gag Ala 375	ggc Gly 375	tta Leu 375	atg Met 375	aag Lys 375	gca Ala 380	tcg Ser 380	ttt Phe 380	gct Ala 380	gta Val 380	1152
cga Arg 385	aat Asn 385	ggc Gly 385	gtg Val 385	atc Ile 385	ccg Pro 390	cca Pro 390	aac Asn 390	ctg Leu 390	ctg Leu 395	ttt Phe 395	gag Glu 395	aag Lys 395	atc Ile 395	agt Ser 400	ccc Pro 400	1200
cgt Arg 400	gtc Val 400	gct Ala 400	ccg Pro 400	ttc Phe 400	tat Tyr 400	acg Thr 400	cac His 400	ttg Leu 400	aaa Lys 400	att Ile 400	gca Ala 400	acg Thr 400	gag Glu 400	gcc Ala 400	aca Thr 400	1248

T04TH 5029300

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gaa	tgg	ccg	att	ggt	gcg	ccc	ggg	cag	cct	cgc	aga	gtc	agc	ggt	aat	1296			
Glu	Trp	Pro	Ile	Val	Ala	Pro	Gly	Gln	Pro	Arg	Arg	Val	Ser	Val	Asn				
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Ile	Arg	Ile	Ala	His	Leu	Arg	Gly	Val	Val	Ser	Ala	Glu	His	Ala	Ser				
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gat Asp 705	gac Asp	gca Ala	aag Lys	gaa Glu 710	cta Leu	tgc Cys	gag Glu	ctc Leu	gaa Glu 715	gcc Ala	ttt Phe	gag Glu	ggg Gly	cgg Arg	gtc Val 720	2160
tgc Cys	gtc Val	gcc Ala	gct Ala	agc Ser 725	aat Asn	tca Ser	ccg Pro	gat Asp 730	agt Ser	gtg Val	acc Thr	ttc Phe	tcc Ser	ggc Gly 735	gac Asp	2208
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tct Ser	tac Tyr	agc Ser	aca Thr	gca Ala	tcg Ser	acc Thr	ttc Phe	cag Gln	tgg Trp	aca Thr	aac Asn	ttc Phe	atc Ile	agg Arg	ccc Pro	2928

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gac Asp 1760	acc Thr	aaa Lys	ttc Phe	ttc Phe	gtt Val	gag Glu 1765	caa Gln	ctt Leu	ttg Leu	cgc Arg	ttc Phe 1770	gag Glu	gag Glu	agc Ser	5319
gat Asp 1775	gat Asp	cag Gln	ctt Leu	ttg Leu	gaa Glu	tca Ser 1780	ata Ile	aca Thr	tgg Trp	act Thr	cat His 1785	gag Glu	ccc Pro	gaa Glu	5364
gtg Val 1790	tac Tyr	tgg Trp	tgc Cys	aag Lys	ggt Gly	cgt Arg 1795	gcc Ala	tgg Trp	gtc Val	cct Pro	cgt Arg 1800	ttg Leu	aag Lys	cag Gln	5409
gat Asp 1805	att Ile	gct Ala	agg Arg	aac Asn	gac Asp	cgt Arg 1810	atg Met	aac Asn	tcg Ser	tct Ser	cgt Arg 1815	cgt Arg	cca Pro	att Ile	5454
ttc Phe 1820	ggt Gly	aac Asn	ttt Phe	aat Asn	tcg Ser	tcc Ser 1825	aag Lys	acg Thr	gcc Ala	att Ile	gca Ala 1830	ctg Leu	aaa Lys	gag Glu	5499
gcg Ala 1835	agg Arg	gga Gly	gca Ala	tcc Ser	tca Ser	tcg Ser 1840	atg Met	tac Tyr	tat Tyr	ctt Leu	gag Glu 1845	tca Ser	acc Thr	gag Glu	5544
acg Thr 1850	tgt Cys	gat Asp	tcg Ser	tta Leu	gaa Glu	gac Asp 1855	gct Ala	cgt Arg	cat His	gct Ala	gga Gly 1860	aaa Lys	gca Ala	act Thr	5589
gtt Val 1865	cgt Arg	gtt Val	cgc Arg	tac Tyr	gct Ala	ctt Leu 1870	ccc Pro	cag Gln	gca Ala	att Ile	cgc Arg 1875	gtg Val	ggc Gly	cat His	5634
ctc Leu 1880	gga Gly	tac Tyr	ttc Phe	cat His	gtc Val	gtg Val 1885	cag Gln	ggc Gly	agt Ser	att Ile	ctg Leu 1890	gag Glu	aat Asn	aca Thr	5679
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gcg Ala 1925	gaa Glu	ggc Gly	gag Glu	gat Asp	agt Ser	tcc Ser 1930	ttc Phe	ttg Leu	ttg Leu	tcc Ser	aca Thr 1935	gct Ala	gca Ala	gcc Ala	5814
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gat Asp 1955	gca Ala	tca Ser	att Ile	ctg Leu	att Ile	atg Met 1960	gag Glu	ccc Pro	cca Pro	atc Ile	ttc Phe 1965	tgc Cys	gtc Val	aaa Lys	5904
gca Ala 1970	att Ile	ctg Leu	gag Glu	tcg Ser	gcc Ala	aaa Lys 1975	acc Thr	tac Tyr	ggt Gly	gtt Val	cag Gln 1980	gtt Val	cat His	ttg Leu	5949
gca Ala 1985	aca Thr	act Thr	ctg Leu	tcc Ser	gac Asp	gtc Val 1990	aaa Lys	act Thr	att Ile	ccg Pro	gct Ala 1995	cct Pro	tgg Trp	atc Ile	5994
cga Arg 2000	tta Leu	cat His	gcc Ala	aag Lys	gaa Glu	acc Thr 2005	gac Asp	gct Ala	cgg Arg	ctg Leu	aaa Lys 2010	cac His	agc Ser	ctg Leu	6039
ccg Pro	aca Thr	aac Asn	atg Met	atg Met	gca Ala	ttc Phe	ttt Phe	gac Asp	ttg Leu	tct Ser	acc Thr	gac Asp	cgg Arg	act Thr	6084

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2015			2020			2025									
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	2045					2050					2055				
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	2060					2065					2070				
tct Ser	gtg Val	gca Ala	atg Met	gca Ala	aaa Lys	aat Asn	acc Thr	gtc Val	tct Ser	gcg Ala	tcg Ser	act Thr	gtc Val	gac Asp	6264
	2075					2080					2085				
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	2105					2110					2115				
gtc Val	atc Ile	gac Asp	tgg Trp	aag Lys	gaa Glu	aat Asn	gag Glu	gtg Val	tcc Ser	gct Ala	agg Arg	att Ile	tgc Cys	ccc Pro	6399
	2120					2125					2130				
atc Ile	gac Asp	tct Ser	ggg Gly	aac Asn	tta Leu	ttt Phe	tcc Ser	aac Asn	aag Lys	aag Lys	acg Thr	tat Tyr	ttg Leu	ctt Leu	6444
	2135					2140					2145				
gtt Val	ggg Gly	ctt Leu	acc Thr	ggg Gly	gac Asp	ctt Leu	ggg Gly	cgc Arg	tct Ser	ctc Leu	tgt Cys	cgc Arg	tgg Trp	atg Met	6489
	2150					2155					2160				
atc Ile	ttg Leu	cat His	ggc Gly	gcc Ala	cgc Arg	cat His	gtt Val	gtg Val	ctc Leu	act Thr	agc Ser	cgg Arg	aac Asn	cct Pro	6534
	2165					2170					2175				
cga Arg	ctt Leu	gat Asp	ccc Pro	aaa Lys	tgg Trp	atc Ile	gcc Ala	aac Asn	atg Met	gag Glu	gca Ala	ctt Leu	ggg Gly	ggg Gly	6579
	2180					2185					2190				
gac Asp	atc Ile	acc Thr	gtt Val	ctg Leu	tca Ser	atg Met	gat Asp	gtt Val	gcc Ala	aat Asn	gag Glu	gat Asp	tca Ser	gtc Val	6624
	2195					2200					2205				
gat Asp	gct Ala	ggc Gly	ctt Leu	ggc Gly	aag Lys	ctt Leu	gtc Val	gat Asp	atg Met	aag Lys	ttg Leu	cca Pro	cct Pro	gtt Val	6669
	2210					2215					2220				
gcc Ala	ggc Gly	atc Ile	gcg Ala	ttc Phe	ggg Gly	cct Pro	ttg Leu	gtg Val	ctg Leu	cag Gln	gat Asp	gtc Val	atg Met	ctg Leu	6714
	2225					2230					2235				
aag Lys	aac Asn	atg Met	gac Asp	cac His	cag Gln	atg Met	atg Met	gac Asp	atg Met	gtg Val	ttg Leu	aag Lys	ccc Pro	aag Lys	6759
	2240					2245					2250				
gta Val	caa Gln	gga Gly	gca Ala	cgc Arg	att Ile	ctt Leu	cat His	gaa Glu	cgg Arg	ttc Phe	tcc Ser	gaa Glu	cag Gln	acg Thr	6804
	2255					2260					2265				
ggc Gly	agc Ser	aag Lys	gcg Ala	ctc Leu	gac Asp	ttc Phe	ttc Phe	atc Ile	atg Met	ttt Phe	tcg Ser	tcc Ser	att Ile	gtt Val	6849
	2270					2275					2280				

gca Ala 2285	gtt Val 2285	att Ile 2285	ggc Gly 2285	aat Asn 2285	cct Pro 2285	ggc Gly 2290	cag Gln 2290	tcc Ser 2290	aac Asn 2290	tat Tyr 2290	ggc Gly 2295	gct Ala 2295	gcg Ala 2295	aat Asn 2295	6894
gcc Ala 2300	tac Tyr 2300	cta Leu 2300	cag Gln 2300	gct Ala 2300	ctg Leu 2305	gcc Ala 2305	cag Gln 2305	caa Gln 2305	cgg Arg 2305	tgc Cys 2310	gcc Ala 2310	aga Arg 2310	gga Gly 2310	ttg Leu 2310	6939
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gtc Val 2330	acg Thr 2330	agg Arg 2330	gcc Ala 2330	gag Glu 2335	atg Met 2335	gag Glu 2335	gag Glu 2335	gac Asp 2335	ttt Phe 2335	gat Asp 2340	gct Ala 2340	atc Ile 2340	cgt Arg 2340	ttc Phe 2340	7029
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gaa Glu 2360	gcg Ala 2360	gtc Val 2360	gtg Val 2360	tct Ser 2360	gac Asp 2365	cag Gln 2365	cgt Arg 2365	gcc Ala 2365	cgg Arg 2365	cag Gln 2370	caa Gln 2370	cca Pro 2370	cag Gln 2370	cgc Arg 2370	7119
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cca Pro 2390	gat Asp 2390	ctt Leu 2390	gac Asp 2390	cct Pro 2395	gcg Ala 2395	ctt Leu 2395	caa Gln 2395	gat Asp 2395	cga Arg 2400	att Ile 2400	att Ile 2400	tac Tyr 2400	ttc Phe 2400	aac Asn 2400	7209
gac Asp 2405	cct Pro 2405	cgt Arg 2405	ttc Phe 2405	gga Gly 2410	aac Asn 2410	ttc Phe 2410	aaa Lys 2415	att Ile 2415	ccc Pro 2415	ggg Gly 2415	caa Gln 2415	cgc Arg 2415	gga Gly 2415	gac Asp 2415	7254
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ctc Leu 2435	aaa Lys 2435	caa Gln 2435	gca Ala 2435	aca Thr 2435	act Thr 2440	tta Leu 2440	gac Asp 2440	caa Gln 2445	ggt Val 2445	cgg Arg 2445	caa Gln 2445	atc Ile 2445	gtg Val 2445	att Ile 2445	7344
gat Asp 2450	ggg Gly 2450	cta Leu 2450	tct Ser 2450	gag Glu 2455	aaa Lys 2455	ctc Leu 2455	cgt Arg 2455	ggt Val 2455	acc Thr 2455	ctc Leu 2460	caa Gln 2460	ggt Val 2460	tcg Ser 2460	gac Asp 2460	7389
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tcc Ser 2525	att Ile 2525	ccg Pro 2525	ctg Leu 2525	ctg Leu 2530	ttg Leu 2530	caa Gln 2530	att Ile 2530	ggg Gly 2530	gat Asp 2535	tcc Ser 2535	acg Thr 2535	gga Gly 2535	acc Thr 2535	tcg Ser 2535	7614
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2570	2575	2580	
cgc gag agg ttg tcc ctt ggc cag gag tat tcc tgg agg cag caa Arg Glu Arg Leu Ser Leu Gly Gln Glu Tyr Ser Trp Arg Gln Gln	7794		
2585	2590	2595	
caa atg gta aaa gat cat acc atc ttc aac aac act att ggc atg Gln Met Val Lys Asp His Thr Ile Phe Asn Asn Thr Ile Gly Met	7839		
2600	2605	2610	
ttc atg aag ggt acc att gac ctc gac cgg ttg agg cgg gct ctg Phe Met Lys Gly Thr Ile Asp Leu Asp Arg Leu Arg Arg Ala Leu	7884		
2615	2620	2625	
aaa gcc tca ttg cgc cgt cac gag atc ttc cgt acg tgc ttt gtt Lys Ala Ser Leu Arg Arg His Glu Ile Phe Arg Thr Cys Phe Val	7929		
2630	2635	2640	
act ggc gat gac tat agc agc gat tta aat ggt ccc gtc caa gtg Thr Gly Asp Asp Tyr Ser Ser Asp Leu Asn Gly Pro Val Gln Val	7974		
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2660	2665	2670	
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2675	2680	2685	
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2690	2695	2700	
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2720	2725	2730	
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2735	2740	2745	
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2750	2755	2760	
cga atg ggg gac gat atc gcg ttc tgg aag tcc atg cat agc aaa Arg Met Gly Asp Asp Ile Ala Phe Trp Lys Ser Met His Ser Lys	8334		
2765	2770	2775	
gtc tcg tca tct gcg cca acc gtg ctt ccc atc atg aat ctg atc Val Ser Ser Ser Ala Pro Thr Val Leu Pro Ile Met Asn Leu Ile	8379		
2780	2785	2790	
aat gac cct gct gcc aat tca gag cag cag caa ata cag cca ttc Asn Asp Pro Ala Ala Asn Ser Glu Gln Gln Gln Ile Gln Pro Phe	8424		
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acg tgg	cag cag	tat gaa	gca	att gct	cgt tta	gat	ccc atg	gtc	8469
Thr Trp	Gln Gln	Tyr Glu	Ala	Ile Ala	Arg Leu	Asp	Pro Met	Val	
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Ala Phe	Arg Ile	Lys Glu	Arg	Ser Arg	Lys His	Lys	Ala Thr	Pro	
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Met Gln	Phe Tyr	Leu Ala	Ala	Tyr His	Val Leu	Leu	Ala Arg	Leu	
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Thr Gly	Ser Lys	Asp Ile	Thr	Ile Gly	Leu Ala	Glu	Thr Asn	Arg	
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tcc acc	atg gaa	gaa att	tcg	gcg atg	ggc ttt	ttc	gct aac	gtg	8649
Ser Thr	Met Glu	Glu Ile	Ser	Ala Met	Gly Phe	Phe	Ala Asn	Val	
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Leu Pro	Leu Arg	Phe Asp	Glu	Phe Val	Gly Ser	Lys	Thr Phe	Gly	
2885			2890			2895			
gag cac	ctt gta	gcc acc	aag	gac agt	gtg cgt	gag	gcc atg	caa	8739
Glu His	Leu Val	Ala Thr	Lys	Asp Ser	Val Arg	Glu	Ala Met	Gln	
2900			2905			2910			
cac gcg	cgg gtg	ccg tat	ggc	gtc atc	ctc gac	tgt	cta ggc	ctg	8784
His Ala	Arg Val	Pro Tyr	Gly	Val Ile	Leu Asp	Cys	Leu Gly	Leu	
2915			2920			2925			
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Asn Leu	Pro Thr	Ser Gly	Glu	Glu Pro	Lys Thr	Gln	Thr His	Ala	
2930			2935			2940			
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Pro Leu	Phe Gln	Ala Val	Phe	Asp Tyr	Lys Gln	Gly	Gln Ala	Glu	
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Ser Gly	Ser Ile	Gly Asn	Ala	Lys Met	Thr Ser	Val	Leu Ala	Ser	
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cgt gag	cgc act	cct tat	gac	atc gtt	ctc gag	atg	tgg gat	gac	8964
Arg Glu	Arg Thr	Pro Tyr	Asp	Ile Val	Leu Glu	Met	Trp Asp	Asp	
2975			2980			2985			
cct acc	aag gac	cca ctc	att	cat gtc	aaa ctt	cag	agc tcg	ctg	9009
Pro Thr	Lys Asp	Pro Leu	Ile	His Val	Lys Leu	Gln	Ser Ser	Leu	
2990			2995			3000			
tat ggc	cct gag	cac gct	cag	gcc ttt	gta gac	cac	ttt tct	tca	9054
Tyr Gly	Pro Glu	His Ala	Gln	Ala Phe	Val Asp	His	Phe Ser	Ser	
3005			3010			3015			
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<212> PRT

<213> Penicillium citrinum

<400> 44

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 1 5 10 15

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			20					25					30		
Leu	Leu	Lys	Glu	Pro	Arg	Asp	Val	Gln	Thr	Lys	Ile	Pro	Lys	Glu	Arg
		35					40					45			
Phe	Asp	Val	Asp	Thr	Phe	Tyr	Ser	Pro	Asp	Gly	Thr	His	Pro	Gly	Arg
	50					55					60				
Thr	Asn	Ala	Pro	Phe	Ala	Tyr	Leu	Leu	Gln	Glu	Asp	Leu	Arg	Gly	Phe
65					70					75					80
Asp	Ala	Ser	Phe	Phe	Asn	Ile	Gln	Ala	Gly	Glu	Ala	Glu	Thr	Ile	Asp
				85					90					95	
Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Thr	Val	Tyr	Glu	Ala	Val	Ser	Asn
			100					105					110		
Ala	Gly	Leu	Arg	Ile	Gln	Gly	Leu	Gln	Gly	Ser	Ser	Thr	Ala	Val	Tyr
		115					120					125			
Val	Gly	Met	Met	Thr	His	Asp	Tyr	Glu	Thr	Ile	Val	Thr	Arg	Glu	Leu
	130					135					140				
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Ser	Asn	Arg	Val	Ser	Tyr	Phe	Phe	Asp	Trp	His	Gly	Pro	Ser	Met	Thr
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Ile	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Ala	Ala	Val	His	Leu	Ala	Val
			180					185					190		
Gln	Gln	Leu	Arg	Thr	Gly	Glu	Ser	Thr	Met	Ala	Val	Ala	Ala	Gly	Ala
		195					200					205			
Asn	Leu	Ile	Leu	Gly	Pro	Met	Thr	Phe	Val	Met	Glu	Ser	Lys	Leu	Asn
	210					215					220				
Met	Leu	Ser	Pro	Asn	Gly	Arg	Ser	Arg	Met	Trp	Asp	Ala	Ala	Ala	Asp
225					230					235					240
Gly	Tyr	Ala	Arg	Gly	Glu	Gly	Val	Cys	Ser	Ile	Val	Leu	Lys	Thr	Leu
				245					250					255	
Ser	Gln	Ala	Leu	Arg	Asp	Gly	Asp	Ser	Ile	Glu	Cys	Val	Ile	Arg	Glu
			260					265					270		
Thr	Gly	Ile	Asn	Gln	Asp	Gly	Arg	Thr	Thr	Gly	Ile	Thr	Met	Pro	Asn
		275					280					285			

His Ser Ala Gln Glu Ala Leu Ile Arg Ala Thr Tyr Ala Lys Ala Gly
290 295 300

Leu Asp Ile Thr Asn Pro Gln Glu Arg Cys Gln Phe Phe Glu Ala His
305 310 315 320

Gly Thr Gly Thr Pro Ala Gly Asp Pro Gln Glu Ala Glu Ala Ile Ala
325 330 335

Thr Ala Phe Phe Gly His Lys Asp Gly Thr Ile Asp Ser Asp Gly Glu
340 345 350

Lys Asp Glu Leu Phe Val Gly Ser Ile Lys Thr Val Leu Gly His Thr
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Glu Gly Thr Ala Gly Ile Ala Gly Leu Met Lys Ala Ser Phe Ala Val
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Arg Asn Gly Val Ile Pro Pro Asn Leu Leu Phe Glu Lys Ile Ser Pro
385 390 395 400

Arg Val Ala Pro Phe Tyr Thr His Leu Lys Ile Ala Thr Glu Ala Thr
405 410 415

Glu Trp Pro Ile Val Ala Pro Gly Gln Pro Arg Arg Val Ser Val Asn
420 425 430

Ser Phe Gly Phe Gly Gly Thr Asn Ala His Ala Ile Ile Glu Glu Tyr
435 440 445

Met Ala Pro Pro His Lys Pro Thr Ala Val Val Thr Glu Val Thr Ser
450 455 460

Asp Ala Asp Ala Cys Ser Leu Pro Leu Val Leu Ser Ser Lys Ser Gln
465 470 475 480

Arg Ser Met Lys Ala Thr Leu Glu Asn Met Leu Gln Phe Leu Glu Thr
485 490 495

His Asp Asp Val Asp Met His Asp Ile Ala Tyr Thr Leu Leu Glu Lys
500 505 510

Arg Ser Ile Leu Pro Phe Arg Arg Ala Ile Ala Ala His Asn Lys Glu
515 520 525

Val Ala Arg Ala Ala Leu Glu Ala Ala Ile Ala Asp Gly Glu Val Val
530 535 540

Thr Asp Phe Arg Thr Asp Ala Asn Asp Asn Pro Arg Val Leu Gly Val
545 550 555 560

Phe Thr Gly Gln Gly Ala Gln Trp Pro Gly Met Leu Lys Lys Leu Met
565 570 575

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Val Gly Met Pro Phe Val Arg Gly Ile Leu Glu Glu Leu Asp Asn Ser
580 585 590

Leu Gln Thr Leu Pro Glu Lys Tyr Arg Pro Thr Trp Thr Leu Tyr Asp
595 600 605

Gln Leu Met Leu Glu Gly Asp Ala Ser Asn Val Arg Leu Ala Ser Phe
610 615 620

Ser Gln Pro Leu Cys Cys Ala Val Gln Ile Val Leu Val Arg Leu Leu
625 630 635 640

Ala Ala Ala Gly Ile Glu Phe Ser Ala Ile Val Gly His Ser Ser Gly
645 650 655

Glu Ile Ala Cys Ala Phe Ala Ala Gly Phe Ile Ser Ala Thr Gln Ala
660 665 670

Ile Arg Ile Ala His Leu Arg Gly Val Val Ser Ala Glu His Ala Ser
675 680 685

Ser Pro Ser Gly Gln Thr Gly Ala Met Leu Ala Ala Gly Met Ser Tyr
690 695 700

Asp Asp Ala Lys Glu Leu Cys Glu Leu Glu Ala Phe Glu Gly Arg Val
705 710 715 720

Cys Val Ala Ala Ser Asn Ser Pro Asp Ser Val Thr Phe Ser Gly Asp
725 730 735

Met Asp Ala Ile Gln His Val Glu Gly Val Leu Glu Asp Glu Ser Thr
740 745 750

Phe Ala Arg Ile Leu Arg Val Asp Lys Ala Tyr His Ser His His Met
755 760 765

His Pro Cys Ala Ala Pro Tyr Val Lys Ala Leu Leu Glu Cys Asp Cys
770 775 780

Ala Val Ala Asp Gly Gln Gly Asn Asp Ser Val Ala Trp Phe Ser Ala
785 790 795 800

Val His Glu Thr Ser Lys Gln Met Thr Val Gln Asp Val Met Pro Ala
805 810 815

Tyr Trp Lys Asp Asn Leu Val Ser Pro Val Leu Phe Ser Gln Ala Val
820 825 830

Gln Lys Ala Val Ile Thr His Arg Leu Ile Asp Val Ala Ile Glu Ile
835 840 845

144-5023333

Phe Tyr Arg Glu Leu Asp Leu Leu Gly Tyr Asp Tyr Ser Lys Asp
1115 1120 1125

Phe	Arg	Arg	Leu	Gln	Thr	Met	Arg	Arg	Ala	Asp	Ser	Lys	Ala	Ser
1130						1135					1140			
Gly	Thr	Leu	Ala	Phe	Leu	Pro	Leu	Lys	Asp	Glu	Leu	Arg	Asn	Glu
1145						1150					1155			
Pro	Leu	Leu	Leu	His	Pro	Ala	Pro	Leu	Asp	Ile	Ala	Phe	Gln	Thr
1160						1165					1170			
Val	Ile	Gly	Ala	Tyr	Ser	Ser	Pro	Gly	Asp	Arg	Arg	Leu	Arg	Ser
1175						1180					1185			
Leu	Tyr	Val	Pro	Thr	His	Val	Asp	Arg	Val	Thr	Leu	Ile	Pro	Ser
1190						1195					1200			
Leu	Cys	Ile	Ser	Ala	Gly	Asn	Ser	Gly	Glu	Thr	Glu	Leu	Ala	Phe
1205						1210					1215			
Asp	Thr	Ile	Asn	Thr	His	Asp	Lys	Gly	Asp	Phe	Leu	Ser	Gly	Asp
1220						1225					1230			
Ile	Thr	Val	Tyr	Asp	Ser	Thr	Lys	Thr	Thr	Leu	Phe	Gln	Val	Asp
1235						1240					1245			
Asn	Ile	Val	Phe	Lys	Pro	Phe	Ser	Pro	Pro	Thr	Ala	Ser	Thr	Asp
1250						1255					1260			
His	Arg	Ile	Phe	Ala	Lys	Trp	Val	Trp	Gly	Pro	Leu	Thr	Pro	Glu
1265						1270					1275			
Lys	Leu	Leu	Glu	Asp	Pro	Ala	Thr	Leu	Ile	Ile	Ala	Arg	Asp	Lys
1280						1285					1290			
Glu	Asp	Ile	Leu	Thr	Ile	Glu	Arg	Ile	Val	Tyr	Phe	Tyr	Ile	Lys
1295						1300					1305			
Ser	Phe	Leu	Ala	Gln	Ile	Thr	Pro	Asp	Asp	Arg	Gln	Asn	Ala	Asp
1310						1315					1320			
Leu	His	Ser	Gln	Lys	Tyr	Ile	Glu	Trp	Cys	Asp	Gln	Val	Gln	Ala
1325						1330					1335			
Asp	Ala	Arg	Ala	Gly	His	His	Gln	Trp	Tyr	Gln	Glu	Ser	Trp	Glu
1340						1345					1350			
Glu	Asp	Thr	Ser	Val	His	Ile	Glu	Gln	Met	Cys	Glu	Ser	Asn	Ser
1355						1360					1365			
Ser	His	Pro	His	Val	Arg	Leu	Ile	Gln	Arg	Val	Gly	Lys	Glu	Leu
1370						1375					1380			

T02T40-60298860

Ile Ser Ile Val Arg Gly Asn Gly Asp Pro Leu Asp Ile Met Asn
 1385 1390 1395
 Arg Asp Gly Leu Phe Thr Glu Tyr Tyr Thr Asn Lys Leu Ala Phe
 1400 1405 1410
 Gly Ser Ala Ile His Val Val Gln Asp Leu Val Ser Gln Ile Ala
 1415 1420 1425
 His Arg Tyr Gln Ser Ile Asp Ile Leu Glu Ile Gly Leu Gly Thr
 1430 1435 1440
 Gly Ile Ala Thr Lys Arg Val Leu Ala Ser Pro Gln Leu Gly Phe
 1445 1450 1455
 Asn Ser Tyr Thr Cys Thr Asp Ile Ser Ala Asp Val Ile Gly Lys
 1460 1465 1470
 Ala Arg Glu Gln Leu Ser Glu Phe Asp Gly Leu Met Gln Phe Glu
 1475 1480 1485
 Ala Leu Asp Ile Asn Arg Ser Pro Ala Glu Gln Gly Phe Lys Pro
 1490 1495 1500
 His Ser Tyr Asp Leu Ile Ile Ala Ser Asp Val Leu His Ala Ser
 1505 1510 1515
 Ser Asn Phe Glu Glu Lys Leu Ala His Ile Arg Ser Leu Leu Lys
 1520 1525 1530
 Pro Gly Gly His Leu Val Thr Phe Gly Val Thr His Arg Glu Pro
 1535 1540 1545
 Ala Arg Leu Ala Phe Ile Ser Gly Leu Phe Ala Asp Arg Trp Thr
 1550 1555 1560
 Gly Glu Asp Glu Thr Arg Ala Leu Ser Ala Ser Gly Ser Val Asp
 1565 1570 1575
 Gln Trp Glu His Thr Leu Lys Arg Val Gly Phe Ser Gly Val Asp
 1580 1585 1590
 Ser Arg Thr Leu Asp Arg Glu Asp Asp Leu Ile Pro Ser Val Phe
 1595 1600 1605
 Ser Thr His Ala Val Asp Ala Thr Val Glu Arg Leu Tyr Asp Pro
 1610 1615 1620
 Leu Ser Ala Pro Leu Lys Asp Ser Tyr Pro Pro Leu Val Val Ile
 1625 1630 1635
 Gly Gly Glu Ser Thr Lys Thr Glu Arg Ile Leu Asn Asp Met Lys
 1640 1645 1650

0029292800
 0410-0410

Ala Ala Leu Pro His Arg His Ile His Ser Val Lys Arg Leu Glu
1655 1660 1665

Ser Val Leu Asp Asp Pro Ala Leu Gln Pro Lys Ser Thr Phe Val
1670 1675 1680

Ile Leu Ser Glu Leu Asp Asp Glu Val Phe Cys Asn Leu Glu Glu
1685 1690 1695

Asp Lys Phe Glu Ala Val Lys Ser Leu Leu Phe Tyr Ala Gly Arg
1700 1705 1710

Met Met Trp Leu Thr Glu Asn Ala Trp Ile Asp His Pro His Gln
1715 1720 1725

Ala Ser Thr Ile Gly Met Leu Arg Thr Ile Lys Leu Glu Asn Pro
1730 1735 1740

Asp Leu Gly Thr His Val Phe Asp Val Asp Thr Val Glu Asn Leu
1745 1750 1755

Asp Thr Lys Phe Phe Val Glu Gln Leu Leu Arg Phe Glu Glu Ser
1760 1765 1770

Asp Asp Gln Leu Leu Glu Ser Ile Thr Trp Thr His Glu Pro Glu
1775 1780 1785

Val Tyr Trp Cys Lys Gly Arg Ala Trp Val Pro Arg Leu Lys Gln
1790 1795 1800

Asp Ile Ala Arg Asn Asp Arg Met Asn Ser Ser Arg Arg Pro Ile
1805 1810 1815

Phe Gly Asn Phe Asn Ser Ser Lys Thr Ala Ile Ala Leu Lys Glu
1820 1825 1830

Ala Arg Gly Ala Ser Ser Ser Met Tyr Tyr Leu Glu Ser Thr Glu
1835 1840 1845

Thr Cys Asp Ser Leu Glu Asp Ala Arg His Ala Gly Lys Ala Thr
1850 1855 1860

Val Arg Val Arg Tyr Ala Leu Pro Gln Ala Ile Arg Val Gly His
1865 1870 1875

Leu Gly Tyr Phe His Val Val Gln Gly Ser Ile Leu Glu Asn Thr
1880 1885 1890

Cys Glu Val Pro Val Val Ala Leu Ala Glu Lys Asn Gly Ser Ile
1895 1900 1905

1905-1910-1915-1920-1925-1930-1935-1940-1945-1950-1955-1960-1965-1970-1975-1980-1985-1990-1995-2000-2005-2010-2015-2020-2025-2030-2035-2040-2045-2050-2055-2060-2065-2070-2075-2080-2085-2090-2095-2100-2105-2110-2115-2120-2125-2130-2135-2140-2145-2150-2155-2160-2165-2170-2175-2180-2185-2190-2195-2200-2205-2210-2215-2220-2225-2230-2235-2240-2245-2250-2255-2260-2265-2270-2275-2280-2285-2290-2295-2300-2305-2310-2315-2320-2325-2330-2335-2340-2345-2350-2355-2360-2365-2370-2375-2380-2385-2390-2395-2400-2405-2410-2415-2420-2425-2430-2435-2440-2445-2450-2455-2460-2465-2470-2475-2480-2485-2490-2495-2500-2505-2510-2515-2520-2525-2530-2535-2540-2545-2550-2555-2560-2565-2570-2575-2580-2585-2590-2595-2600-2605-2610-2615-2620-2625-2630-2635-2640-2645-2650-2655-2660-2665-2670-2675-2680-2685-2690-2695-2700-2705-2710-2715-2720-2725-2730-2735-2740-2745-2750-2755-2760-2765-2770-2775-2780-2785-2790-2795-2800-2805-2810-2815-2820-2825-2830-2835-2840-2845-2850-2855-2860-2865-2870-2875-2880-2885-2890-2895-2900-2905-2910-2915-2920-2925-2930-2935-2940-2945-2950-2955-2960-2965-2970-2975-2980-2985-2990-2995-3000-3005-3010-3015-3020-3025-3030-3035-3040-3045-3050-3055-3060-3065-3070-3075-3080-3085-3090-3095-3100-3105-3110-3115-3120-3125-3130-3135-3140-3145-3150-3155-3160-3165-3170-3175-3180-3185-3190-3195-3200-3205-3210-3215-3220-3225-3230-3235-3240-3245-3250-3255-3260-3265-3270-3275-3280-3285-3290-3295-3300-3305-3310-3315-3320-3325-3330-3335-3340-3345-3350-3355-3360-3365-3370-3375-3380-3385-3390-3395-3400-3405-3410-3415-3420-3425-3430-3435-3440-3445-3450-3455-3460-3465-3470-3475-3480-3485-3490-3495-3500-3505-3510-3515-3520-3525-3530-3535-3540-3545-3550-3555-3560-3565-3570-3575-3580-3585-3590-3595-3600-3605-3610-3615-3620-3625-3630-3635-3640-3645-3650-3655-3660-3665-3670-3675-3680-3685-3690-3695-3700-3705-3710-3715-3720-3725-3730-3735-3740-3745-3750-3755-3760-3765-3770-3775-3780-3785-3790-3795-3800-3805-3810-3815-3820-3825-3830-3835-3840-3845-3850-3855-3860-3865-3870-3875-3880-3885-3890-3895-3900-3905-3910-3915-3920-3925-3930-3935-3940-3945-3950-3955-3960-3965-3970-3975-3980-3985-3990-3995-4000-4005-4010-4015-4020-4025-4030-4035-4040-4045-4050-4055-4060-4065-4070-4075-4080-4085-4090-4095-4100-4105-4110-4115-4120-4125-4130-4135-4140-4145-4150-4155-4160-4165-4170-4175-4180-4185-4190-4195-4200-4205-4210-4215-4220-4225-4230-4235-4240-4245-4250-4255-4260-4265-4270-4275-4280-4285-4290-4295-4300-4305-4310-4315-4320-4325-4330-4335-4340-4345-4350-4355-4360-4365-4370-4375-4380-4385-4390-4395-4400-4405-4410-4415-4420-4425-4430-4435-4440-4445-4450-4455-4460-4465-4470-4475-4480-4485-4490-4495-4500-4505-4510-4515-4520-4525-4530-4535-4540-4545-4550-4555-4560-4565-4570-4575-4580-4585-4590-4595-4600-4605-4610-4615-4620-4625-4630-4635-4640-4645-4650-4655-4660-4665-4670-4675-4680-4685-4690-4695-4700-4705-4710-4715-4720-4725-4730-4735-4740-4745-4750-4755-4760-4765-4770-4775-4780-4785-4790-4795-4800-4805-4810-4815-4820-4825-4830-4835-4840-4845-4850-4855-4860-4865-4870-4875-4880-4885-4890-4895-4900-4905-4910-4915-4920-4925-4930-4935-4940-4945-4950-4955-4960-4965-4970-4975-4980-4985-4990-4995-5000-5005-5010-5015-5020-5025-5030-5035-5040-5045-5050-5055-5060-5065-5070-5075-5080-5085-5090-5095-5100-5105-5110-5115-5120-5125-5130-5135-5140-5145-5150-5155-5160-5165-5170-5175-5180-5185-5190-5195-5200-5205-5210-5215-5220-5225-5230-5235-5240-5245-5250-5255-5260-5265-5270-5275-5280-5285-5290-5295-5300-5305-5310-5315-5320-5325-5330-5335-5340-5345-5350-5355-5360-5365-5370-5375-5380-5385-5390-5395-5400-5405-5410-5415-5420-5425-5430-5435-5440-5445-5450-5455-5460-5465-5470-5475-5480-5485-5490-5495-5500-5505-5510-5515-5520-5525-5530-5535-5540-5545-5550-5555-5560-5565-5570-5575-5580-5585-5590-5595-5600-5605-5610-5615-5620-5625-5630-5635-5640-5645-5650-5655-5660-5665-5670-5675-5680-5685-5690-5695-5700-5705-5710-5715-5720-5725-5730-5735-5740-5745-5750-5755-5760-5765-5770-5775-5780-5785-5790-5795-5800-5805-5810-5815-5820-5825-5830-5835-5840-5845-5850-5855-5860-5865-5870-5875-5880-5885-5890-5895-5900-5905-5910-5915-5920-5925-5930-5935-5940-5945-5950-5955-5960-5965-5970-5975-5980-5985-5990-5995-6000-6005-6010-6015-6020-6025-6030-6035-6040-6045-6050-6055-6060-6065-6070-6075-6080-6085-6090-6095-6100-6105-6110-6115-6120-6125-6130-6135-6140-6145-6150-6155-6160-6165-6170-6175-6180-6185-6190-6195-6200-6205-6210-6215-6220-6225-6230-6235-6240-6245-6250-6255-6260-6265-6270-6275-6280-6285-6290-6295-6300-6305-6310-6315-6320-6325-6330-6335-6340-6345-6350-6355-6360-6365-6370-6375-6380-6385-6390-6395-6400-6405-6410-6415-6420-6425-6430-6435-6440-6445-6450-6455-6460-6465-6470-6475-6480-6485-6490-6495-6500-6505-6510-6515-6520-6525-6530-6535-6540-6545-6550-6555-6560-6565-6570-6575-6580-6585-6590-6595-6600-6605-6610-6615-6620-6625-6630-6635-6640-6645-6650-6655-6660-6665-6670-6675-6680-6685-6690-6695-6700-6705-6710-6715-6720-6725-6730-6735-6740-6745-6750-6755-6760-6765-6770-6775-6780-6785-6790-6795-6800-6805-6810-6815-6820-6825-6830-6835-6840-6845-6850-6855-6860-6865-6870-6875-6880-6885-6890-6895-6900-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Leu His Val Pro Arg Asn Tyr Met His Ser Leu Pro Asp Asn Met
 1910 1915 1920
 Ala Glu Gly Glu Asp Ser Ser Phe Leu Leu Ser Thr Ala Ala Ala
 1925 1930 1935
 Leu Leu Ala Glu Thr Ile Leu Ser Ser Ala Gln Ser Phe Gly Ser
 1940 1945 1950
 Asp Ala Ser Ile Leu Ile Met Glu Pro Pro Ile Phe Cys Val Lys
 1955 1960 1965
 Ala Ile Leu Glu Ser Ala Lys Thr Tyr Gly Val Gln Val His Leu
 1970 1975 1980
 Ala Thr Thr Leu Ser Asp Val Lys Thr Ile Pro Ala Pro Trp Ile
 1985 1990 1995
 Arg Leu His Ala Lys Glu Thr Asp Ala Arg Leu Lys His Ser Leu
 2000 2005 2010
 Pro Thr Asn Met Met Ala Phe Phe Asp Leu Ser Thr Asp Arg Thr
 2015 2020 2025
 Ala Ala Gly Ile Thr Asn Arg Leu Ala Lys Leu Leu Pro Pro Ser
 2030 2035 2040
 Cys Phe Met Tyr Ser Gly Asp Tyr Leu Ile Arg Ser Thr Ala Ser
 2045 2050 2055
 Thr Tyr Lys Val Ser His Val Glu Asp Ile Pro Ile Leu Glu His
 2060 2065 2070
 Ser Val Ala Met Ala Lys Asn Thr Val Ser Ala Ser Thr Val Asp
 2075 2080 2085
 Asp Thr Glu Lys Val Ile Thr Ala Thr Gln Ile Leu Leu Pro Gly
 2090 2095 2100
 Gln Leu Ser Val Asn His Asn Asp Gln Arg Phe Asn Leu Ala Thr
 2105 2110 2115
 Val Ile Asp Trp Lys Glu Asn Glu Val Ser Ala Arg Ile Cys Pro
 2120 2125 2130
 Ile Asp Ser Gly Asn Leu Phe Ser Asn Lys Lys Thr Tyr Leu Leu
 2135 2140 2145
 Val Gly Leu Thr Gly Asp Leu Gly Arg Ser Leu Cys Arg Trp Met
 2150 2155 2160
 Ile Leu His Gly Ala Arg His Val Val Leu Thr Ser Arg Asn Pro
 2165 2170 2175

Arg	Leu	Asp	Pro	Lys	Trp	Ile	Ala	Asn	Met	Glu	Ala	Leu	Gly	Gly
2180						2185					2190			
Asp	Ile	Thr	Val	Leu	Ser	Met	Asp	Val	Ala	Asn	Glu	Asp	Ser	Val
2195						2200					2205			
Asp	Ala	Gly	Leu	Gly	Lys	Leu	Val	Asp	Met	Lys	Leu	Pro	Pro	Val
2210						2215					2220			
Ala	Gly	Ile	Ala	Phe	Gly	Pro	Leu	Val	Leu	Gln	Asp	Val	Met	Leu
2225						2230					2235			
Lys	Asn	Met	Asp	His	Gln	Met	Met	Asp	Met	Val	Leu	Lys	Pro	Lys
2240						2245					2250			
Val	Gln	Gly	Ala	Arg	Ile	Leu	His	Glu	Arg	Phe	Ser	Glu	Gln	Thr
2255						2260					2265			
Gly	Ser	Lys	Ala	Leu	Asp	Phe	Phe	Ile	Met	Phe	Ser	Ser	Ile	Val
2270						2275					2280			
Ala	Val	Ile	Gly	Asn	Pro	Gly	Gln	Ser	Asn	Tyr	Gly	Ala	Ala	Asn
2285						2290					2295			
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2345						2350					2355			
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2360						2365					2370			
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Ala Thr Ala Met Ala Gly Ser Ala Cys Ser Asn Thr Ser Thr Pro Ile
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Ala Ile Val Gly Met Gly Cys Arg Phe Ala Gly Asp Ala Thr Ser Pro
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Gln Lys Leu Trp Glu Met Val Glu Arg Gly Gly Ser Ala Trp Ser Lys
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Val Pro Ser Ser Arg Phe Asn Val Arg Gly Val Tyr His Pro Asn Gly
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gaa agg gtc ggg tcc acc cac gta aag ggt gga cac ttc atc gac gag 288
Glu Arg Val Gly Ser Thr His Val Lys Gly Gly His Phe Ile Asp Glu
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Gly	Glu	Pro	Phe	Leu	Ala	Ser	Leu	Ala	Tyr	Thr	Leu	Gly	Ser	Arg	Arg	
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gca atc aaa tgg agc cga tca aac gca caa gcc agc gag ctg atc Ala Ile Lys Trp Ser Arg Ser Asn Ala Gln Ala Ser Glu Leu Ile	1445 1450 1455	4374
cga ctt tgc gcc cac aag aac ccg cgt tct cgc att ttg gag att Arg Leu Cys Ala His Lys Asn Pro Arg Ser Arg Ile Leu Glu Ile	1460 1465 1470	4419
ggc gga ggc acg ggc ggc tgc aca aag ctt att gtc aat gca ttg Gly Gly Gly Thr Gly Gly Cys Thr Lys Leu Ile Val Asn Ala Leu	1475 1480 1485	4464
gga aac acc aag ccg atc gat cgt tat gac ttc acc gat gtg tct Gly Asn Thr Lys Pro Ile Asp Arg Tyr Asp Phe Thr Asp Val Ser	1490 1495 1500	4509
gcc ggg ttt ttc gag tcg gcg cgt gag caa ttt gcg gat tgg caa Ala Gly Phe Phe Glu Ser Ala Arg Glu Gln Phe Ala Asp Trp Gln	1505 1510 1515	4554
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atg gag tcc tcg ctc ctt gga gag gtg gga agc gag acc ttc aaa 5184 Met Glu Ser Ser Leu Leu Gly Glu Val Gly Ser Glu Thr Phe Lys 1715 1720 1725			
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tct aga gga gca gcc atg agc tcc gag gat cca tgg aaa gct cta 5274 Ser Arg Gly Ala Ala Met Ser Ser Glu Asp Pro Trp Lys Ala Leu 1745 1750 1755			
cat att ggt ctg ctg cgt acc atc cgc aac gaa aat aac ggg aag 5319 His Ile Gly Leu Leu Arg Thr Ile Arg Asn Glu Asn Asn Gly Lys 1760 1765 1770			
gaa tat gta tcg ttg gat ctc gat cct tct cga aac gca tac acc 5364 Glu Tyr Val Ser Leu Asp Leu Asp Pro Ser Arg Asn Ala Tyr Thr 1775 1780 1785			

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1865						1870					1875				
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1940						1945					1950				
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acc Thr	acg Thr	gca Ala	aag Lys	cta Leu	cga Arg	cga Arg	ggc Gly	gaa Glu	aga Arg	gtc Val	ttg Leu	atc Ile	cac His	agt Ser	5994
1985						1990					1995				
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2000						2005					2010				
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ctc Leu	tcg Ser 2120	tgg Trp	caa Gln	aga Arg	gcc Ala	aaa Lys 2125	agt Ser	gaa Glu	gaa Glu	gta Val	tcc Ser 2130	gaa Glu	gcg Ala	ttg Leu	6399			
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gcg Ala	aag Lys 2225	cac His	ttg Leu	att Ile	atc Ile	cta Leu 2230	tcg Ser	aga Arg	agt Ser	gca Ala	aag Lys 2235	gcc Ala	agt Ser	cca Pro	6714			
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Ser	Ser	Leu	Val	Gly	Val	Met	Gly	Gly	Ala	Gly	Gln	Ala	Asn	Tyr	
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Ala	Ala	Ala	Gly	Ala	Phe	Gln	Asp	Ala	Leu	Ala	His	His	Arg	Arg	
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Leu	Ala	Arg	Ile	Gly	Tyr	Lys	Pro	Met	His	Glu	Lys	Asp	Val	Met	
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Asp	Val	Leu	Glu	Lys	Ala	Ile	Leu	Cys	Ser	Ser	Pro	Gln	Phe	Pro	
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Gly	Leu	Lys	Tyr	Arg	Gln	Val	Leu	His	Ala	Asp	Gln	Ser	Phe	Val	
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Ser	Ser	His	Lys	Lys	Gly	Pro	Asp	Gly	Val	Arg	Ala	Gln	Leu	Ser	
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Arg	Val	Thr	Ser	His	Asp	Glu	Ala	Ile	Ser	Ile	Val	Leu	Lys	Ala	
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Met	Thr	Glu	Lys	Leu	Met	Arg	Met	Phe	Gly	Leu	Ala	Glu	Asp	Asp	
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Met	Ser	Ser	Ser	Lys	Asn	Leu	Ala	Gly	Val	Gly	Val	Asp	Ser	Leu	
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Val	Ala	Ile	Glu	Leu	Arg	Asn	Trp	Ile	Thr	Ser	Glu	Ile	His	Val	
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Asp	Val	Ser	Ile	Phe	Glu	Leu	Met	Asn	Gly	Asn	Thr	Ile	Ala	Gly	
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Leu	Val	Glu	Leu	Val	Val	Ala	Lys	Cys	Ser						
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 <212> PRT
 <213> Penicillium citrinum

<400> 46

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Ala Ile Val Gly Met Gly Cys Arg Phe Ala Gly Asp Ala Thr Ser Pro
 35 40 45

Gln Lys Leu Trp Glu Met Val Glu Arg Gly Gly Ser Ala Trp Ser Lys
 50 55 60

Val Pro Ser Ser Arg Phe Asn Val Arg Gly Val Tyr His Pro Asn Gly
 65 70 75 80

Glu Arg Val Gly Ser Thr His Val Lys Gly Gly His Phe Ile Asp Glu
 85 90 95

Asp Pro Ala Leu Phe Asp Ala Ala Phe Phe Asn Met Thr Thr Glu Val
 100 105 110

Ala Ser Cys Met Asp Pro Gln Tyr Arg Leu Met Leu Glu Val Val Tyr
 115 120 125

Glu Ser Leu Glu Ser Ala Gly Ile Thr Ile Asp Gly Met Ala Gly Ser
 130 135 140

Asn Thr Ser Val Phe Gly Gly Val Met Tyr His Asp Tyr Gln Asp Ser
 145 150 155 160

Leu Asn Arg Asp Pro Glu Thr Val Pro Arg Tyr Phe Ile Thr Gly Asn
 165 170 175

Ser Gly Thr Met Leu Ser Asn Arg Ile Ser His Phe Tyr Asp Leu Arg
 180 185 190

Gly Pro Ser Val Thr Val Asp Thr Ala Cys Ser Thr Thr Leu Thr Ala
 195 200 205

Leu His Leu Ala Cys Gln Ser Leu Arg Thr Gly Glu Ser Asp Thr Ala
 210 215 220

Ile Val Ile Gly Ala Asn Leu Leu Leu Asn Pro Asp Val Phe Val Thr
 225 230 235 240

Met Ser Asn Leu Gly Phe Leu Ser Pro Asp Gly Ile Ser Tyr Ser Phe
 245 250 255

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Ser Ile Leu Pro Trp Thr Ser Val Tyr Val Ala Asp Ser Leu Gly Gly
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Leu Val Ser Ala Leu Ser Asp Glu Ser Asn Gln Pro Lys Arg Ala Asn
545 550 555 560

Glu Lys Val Arg Leu Gly Phe Val Phe Thr Gly Gln Gly Ala Gln Trp
565 570 575

His Ala Met Gly Arg Glu Leu Val Asn Thr Phe Pro Val Phe Lys Gln
580 585 590

Ala Ile Leu Glu Cys Asp Gly Tyr Ile Lys Gln Leu Gly Ala Ser Trp
595 600 605

Asn Phe Met Glu Glu Leu His Arg Asp Glu Leu Thr Thr Arg Val Asn
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Asp Ala Glu Tyr Ser Leu Pro Leu Ser Thr Ala Ile Gln Ile Ala Leu
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Val Arg Leu Leu Trp Ser Trp Gly Ile Arg Pro Thr Gly Ile Thr Ser
645 650 655

His Ser Ser Gly Glu Ala Ala Ala Ala Tyr Ala Ala Gly Ala Leu Ser
660 665 670

Ala Arg Ser Ala Ile Gly Ile Thr Tyr Ile Arg Gly Val Leu Thr Thr
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Lys Pro Lys Pro Ala Leu Ala Ala Lys Gly Gly Met Met Ala Val Gly
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Leu Gly Arg Ser Glu Thr Asn Val Tyr Ile Ser Arg Leu Asn Gln Glu
705 710 715 720

Asp Gly Cys Val Val Val Gly Cys Ile Asn Ser Gln Cys Ser Val Thr
725 730 735

Val Ser Gly Asp Leu Gly Ala Ile Glu Lys Leu Glu Lys Leu Leu His
740 745 750

Ala Asp Gly Ile Phe Thr Arg Lys Leu Lys Val Thr Glu Ala Phe His
755 760 765

Ser Ser His Met Arg Pro Met Ala Asp Ala Phe Gly Ala Ser Leu Arg
770 775 780

Asp Leu Phe Asn Ser Asp Asn Asn Asn Asp Asn Pro Asn Ala Asp Thr
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Ser Lys Gly Val Leu Tyr Ser Ser Pro Lys Thr Gly Ser Arg Met Thr
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Asn Thr Lys Glu Lys Ala Val Asp Val Ile Ile Glu Ile Gly Pro His
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Lys Gly Thr Asp Ile Asn Tyr Leu Ser Cys Leu Ser Arg Gly Arg Ser
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Ser Leu Glu Thr Met Tyr Arg Ala Ala Thr Glu Leu Ile Ser Lys Gly
900 905 910

Tyr Gly Leu Lys Met Asp Ala Ile Asn Phe Pro His Gly Arg Lys Glu
915 920 925

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930 935 940

Gln Thr Arg Tyr Trp Arg Glu Pro Arg Gly Ser Arg Glu Ser Lys Gln
945 950 955 960

Arg Thr His Pro Pro His Thr Leu Ile Gly Ser Arg Glu Ser Leu Ser
965 970 975

Pro His Phe Ala Pro Lys Trp Lys His Val Leu Arg Leu Ser Asp Ile
980 985 990

Pro Trp Ile Arg Asp His Val Val Gly Ser Ser Ile Ile Phe Pro Gly
995 1000 1005

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Gly Thr Lys Asn Trp His Gln Phe Ser Val His Ser Ile Ser Gly
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Glu Asn Asn Thr Trp Thr Glu His Cys Thr Gly Leu Ile Arg Ser
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TO THE EDITOR

Glu Ser 1100	Glu Arg Ser His 1105	Leu Asp Cys Ser Thr 1110	Glu Ala Ser
Arg Arg 1115	Leu Asn Leu Gly Ser 1120	Asp Asn Arg Ser 1125	Ile Asp Pro Asn
Asp Leu 1130	Trp Glu Ser Leu His 1135	Ala Asn Gly Ile Cys 1140	His Gly Pro
Ile Phe 1145	Gln Asn Ile Gln Arg 1150	Ile Gln Asn Asn Gly 1155	Gln Gly Ser
Phe Cys 1160	Arg Phe Ser Ile Ala 1165	Asp Thr Ala Ser Ala 1170	Met Pro His
Ser Tyr 1175	Glu Asn Arg His Ile 1180	Val His Pro Thr Thr 1185	Leu Asp Ser
Val Ile 1190	Gln Ala Ala Tyr Thr 1195	Val Leu Pro Tyr Ala 1200	Gly Thr Arg
Met Lys 1205	Thr Ala Met Val Pro 1210	Arg Arg Leu Arg Asn 1215	Val Lys Ile
Ser Ser 1220	Ser Leu Ala Asp Leu 1225	Glu Ala Gly Asp Ala 1230	Leu Asp Ala
Gln Ala 1235	Ser Ile Lys Asp Arg 1240	Asn Ser Gln Ser Phe 1245	Ser Thr Asp
Leu Ala 1250	Val Phe Asp Asp Tyr 1255	Asp Ser Gly Ser Ser 1260	Pro Ser Asp
Gly Ile 1265	Pro Val Ile Glu Ile 1270	Glu Gly Leu Val Phe 1275	Gln Ser Val
Gly Ser 1280	Ser Phe Ser Asp Gln 1285	Lys Ser Asp Ser Asn 1290	Asp Thr Glu
Asn Ala 1295	Cys Ser Ser Trp Val 1300	Trp Ala Pro Asp Ile 1305	Ser Leu Gly
Asp Ser 1310	Thr Trp Leu Lys Glu 1315	Lys Leu Ser Thr Glu 1320	Ala Glu Thr
Lys Glu 1325	Thr Glu Leu Met Met 1330	Asp Leu Arg Arg Cys 1335	Thr Ile Asn
Phe Ile 1340	Gln Glu Ala Val Thr 1345	Asp Leu Thr Asn Ser 1350	Asp Ile Gln

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Gly	Pro	Gln	Leu	Ile	Ala	Met	Leu	Arg	Arg	Glu	Thr	Glu	Pro	Leu
1415						1420					1425			
Glu	Leu	Met	Met	Gln	Asp	Gln	Leu	Leu	Ser	Arg	Tyr	Tyr	Val	Asn
1430						1435					1440			
Ala	Ile	Lys	Trp	Ser	Arg	Ser	Asn	Ala	Gln	Ala	Ser	Glu	Leu	Ile
1445						1450					1455			
Arg	Leu	Cys	Ala	His	Lys	Asn	Pro	Arg	Ser	Arg	Ile	Leu	Glu	Ile
1460						1465					1470			
Gly	Gly	Gly	Thr	Gly	Gly	Cys	Thr	Lys	Leu	Ile	Val	Asn	Ala	Leu
1475						1480					1485			
Gly	Asn	Thr	Lys	Pro	Ile	Asp	Arg	Tyr	Asp	Phe	Thr	Asp	Val	Ser
1490						1495					1500			
Ala	Gly	Phe	Phe	Glu	Ser	Ala	Arg	Glu	Gln	Phe	Ala	Asp	Trp	Gln
1505						1510					1515			
Asp	Val	Met	Thr	Phe	Lys	Lys	Leu	Asp	Ile	Glu	Ser	Asp	Pro	Glu
1520						1525					1530			
Gln	Gln	Gly	Phe	Glu	Cys	Ala	Thr	Tyr	Asp	Val	Val	Val	Ala	Cys
1535						1540					1545			
Gln	Val	Leu	His	Ala	Thr	Arg	Cys	Met	Lys	Arg	Thr	Leu	Ser	Asn
1550						1555					1560			
Val	Arg	Lys	Leu	Leu	Lys	Pro	Gly	Gly	Asn	Leu	Ile	Leu	Val	Glu
1565						1570					1575			
Thr	Thr	Arg	Asp	Gln	Leu	Asp	Leu	Phe	Phe	Thr	Phe	Gly	Leu	Leu
1580						1585					1590			
Pro	Gly	Trp	Trp	Leu	Ser	Glu	Glu	Pro	Glu	Arg	Lys	Ser	Thr	Pro
1595						1600					1605			
Ser	Leu	Thr	Thr	Asp	Leu	Trp	Asn	Thr	Met	Leu	Asp	Thr	Ser	Gly
1610						1615					1620			

Phe Asn Gly Val Glu Leu Glu Val Arg Asp Cys Glu Asp Asp Glu
 1625 1630 1635
 Phe Tyr Met Ile Ser Thr Met Leu Ser Thr Ala Arg Lys Glu Asn
 1640 1645 1650
 Thr Thr Pro Asp Thr Val Ala Glu Ser Glu Val Leu Leu Leu His
 1655 1660 1665
 Gly Ala Leu Arg Pro Pro Ser Ser Trp Leu Glu Ser Leu Gln Ala
 1670 1675 1680
 Ala Ile Cys Glu Lys Thr Ser Ser Ser Pro Ser Ile Asn Ala Leu
 1685 1690 1695
 Gly Glu Val Asp Thr Thr Gly Arg Thr Cys Ile Phe Leu Gly Glu
 1700 1705 1710
 Met Glu Ser Ser Leu Leu Gly Glu Val Gly Ser Glu Thr Phe Lys
 1715 1720 1725
 Ser Ile Thr Ala Met Leu Asn Asn Cys Asn Ala Leu Leu Trp Val
 1730 1735 1740
 Ser Arg Gly Ala Ala Met Ser Ser Glu Asp Pro Trp Lys Ala Leu
 1745 1750 1755
 His Ile Gly Leu Leu Arg Thr Ile Arg Asn Glu Asn Asn Gly Lys
 1760 1765 1770
 Glu Tyr Val Ser Leu Asp Leu Asp Pro Ser Arg Asn Ala Tyr Thr
 1775 1780 1785
 His Glu Ser Leu Tyr Ala Ile Cys Asn Ile Phe Asn Gly Arg Leu
 1790 1795 1800
 Gly Asp Leu Ser Glu Asp Lys Glu Phe Glu Phe Ala Glu Arg Asn
 1805 1810 1815
 Gly Val Ile His Val Pro Arg Leu Phe Asn Asp Pro His Trp Lys
 1820 1825 1830
 Asp Gln Glu Ala Val Glu Val Thr Leu Gln Pro Phe Glu Gln Pro
 1835 1840 1845
 Gly Arg Arg Leu Arg Met Glu Val Glu Thr Pro Gly Leu Leu Asp
 1850 1855 1860
 Ser Leu Gln Phe Arg Asp Asp Glu Gly Arg Glu Gly Lys Asp Leu
 1865 1870 1875

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Pro Asp 1880	Asp Trp Val Glu Ile 1885	Glu Pro Lys Ala Phe 1890	Gly Leu Asn
Phe Arg 1895	Asp Val Met Val Ala 1900	Met Gly Gln Leu Glu 1905	Ala Asn Arg
Val Met 1910	Gly Phe Glu Cys Ala 1915	Gly Val Ile Thr Lys 1920	Leu Gly Gly
Ala Ala 1925	Ala Ala Ser Gln Gly 1930	Leu Arg Leu Gly Asp 1935	Arg Val Cys
Ala Leu 1940	Leu Lys Gly His Trp 1945	Ala Thr Arg Thr Gln 1950	Thr Pro Tyr
Thr Asn 1955	Val Val Arg Ile Pro 1960	Asp Glu Met Gly Phe 1965	Pro Glu Ala
Ala Ser 1970	Val Pro Leu Ala Phe 1975	Thr Thr Ala Tyr Ile 1980	Ala Leu Tyr
Thr Thr 1985	Ala Lys Leu Arg Arg 1990	Gly Glu Arg Val Leu 1995	Ile His Ser
Gly Ala 2000	Gly Gly Val Gly Gln 2005	Ala Ala Ile Ile Leu 2010	Ser Gln Leu
Ala Gly 2015	Ala Glu Val Phe Val 2020	Thr Ala Gly Thr Gln 2025	Ala Lys Arg
Asp Phe 2030	Val Gly Asp Lys Phe 2035	Gly Ile Asn Pro Asp 2040	His Ile Phe
Ser Ser 2045	Arg Asn Asp Leu Phe 2050	Val Asp Gly Ile Lys 2055	Ala Tyr Thr
Gly Gly 2060	Leu Gly Val His Val 2065	Val Leu Asn Ser Leu 2070	Ala Gly Gln
Leu Leu 2075	Gln Ala Ser Phe Asp 2080	Cys Met Ala Glu Phe 2085	Gly Arg Phe
Val Glu 2090	Ile Gly Lys Lys Asp 2095	Leu Glu Gln Asn Ser 2100	Arg Leu Asp
Met Leu 2105	Pro Phe Thr Arg Asp 2110	Val Ser Phe Thr Ser 2115	Ile Asp Leu
Leu Ser 2120	Trp Gln Arg Ala Lys 2125	Ser Glu Glu Val Ser 2130	Glu Ala Leu
Asn His 2135	Val Thr Lys Leu Leu 2140	Glu Thr Lys Ala Ile 2145	Gly Leu Ile

0036705-041701

Gly	Pro	Ile	Gln	Gln	His	Ser	Leu	Ser	Asn	Ile	Glu	Lys	Ala	Phe
2150						2155					2160			
Arg	Thr	Met	Gln	Ser	Gly	Gln	His	Val	Gly	Lys	Val	Val	Val	Asn
2165						2170					2175			
Val	Ser	Gly	Asp	Glu	Leu	Val	Pro	Val	Gly	Asp	Gly	Gly	Phe	Ser
2180						2185					2190			
Leu	Lys	Leu	Lys	Pro	Asp	Ser	Ser	Tyr	Leu	Val	Ala	Gly	Gly	Leu
2195						2200					2205			
Gly	Gly	Ile	Gly	Lys	Gln	Ile	Cys	Gln	Trp	Leu	Val	Asp	His	Gly
2210						2215					2220			
Ala	Lys	His	Leu	Ile	Ile	Leu	Ser	Arg	Ser	Ala	Lys	Ala	Ser	Pro
2225						2230					2235			
Phe	Ile	Thr	Ser	Leu	Gln	Asn	Gln	Gln	Cys	Ala	Val	Tyr	Leu	His
2240						2245					2250			
Ala	Cys	Asp	Ile	Ser	Asp	Gln	Asp	Gln	Val	Thr	Lys	Val	Leu	Arg
2255						2260					2265			
Leu	Cys	Glu	Glu	Ala	His	Ala	Pro	Pro	Ile	Arg	Gly	Ile	Ile	Gln
2270						2275					2280			
Gly	Ala	Met	Val	Leu	Lys	Asp	Ala	Leu	Leu	Ser	Arg	Met	Thr	Leu
2285						2290					2295			
Asp	Glu	Phe	Asn	Ala	Ala	Thr	Arg	Pro	Lys	Val	Gln	Gly	Ser	Trp
2300						2305					2310			
Tyr	Leu	His	Lys	Ile	Ala	Gln	Asp	Val	Asp	Phe	Phe	Val	Met	Leu
2315						2320					2325			
Ser	Ser	Leu	Val	Gly	Val	Met	Gly	Gly	Ala	Gly	Gln	Ala	Asn	Tyr
2330						2335					2340			
Ala	Ala	Ala	Gly	Ala	Phe	Gln	Asp	Ala	Leu	Ala	His	His	Arg	Arg
2345						2350					2355			
Ala	His	Gly	Met	Pro	Ala	Val	Thr	Ile	Asp	Leu	Gly	Met	Val	Lys
2360						2365					2370			
Ser	Val	Gly	Tyr	Val	Ala	Glu	Thr	Gly	Arg	Gly	Val	Ala	Asp	Arg
2375						2380					2385			
Leu	Ala	Arg	Ile	Gly	Tyr	Lys	Pro	Met	His	Glu	Lys	Asp	Val	Met
2390						2395					2400			

00336205:04704

aaa tgg tgg gag ttg acg acc atg agg gct agg cag gac ttc gat acg 192
Lys Trp Trp Glu Leu Thr Thr Met Arg Ala Arg Gln Asp Phe Asp Thr
50 55 60

tat Tyr 65	ggt Gly	ccg Pro	agc Ser	tgg Trp	atc Ile 70	gaa Glu	gct Ala	tgg Trp	ttc Phe 75	tcg Ser	aaa Lys	aac Asn	gac Asp	aag Lys	ccc Pro 80	240
ctg Leu	cgc Arg	ttc Phe	att Ile	gtt Val 85	gat Asp	tcc Ser	ggc Gly	tat Tyr	tgc Cys 90	acc Thr	atc Ile	ctc Leu	cca Pro	tcg Ser 95	tcc Ser	288
atg Met	gcc Ala	gac Asp	gag Glu	ttt Phe 100	cgg Arg	aaa Lys	atc Ile	aaa Lys 105	gat Asp	atg Met	tgc Cys	atg Met	tac Tyr 110	aag Lys	ttt Phe	336
ttg Leu	gcg Ala	gat Asp 115	gac Asp	ttt Phe	cac His	tct Ser	cat His 120	ctc Leu	cct Pro	gga Gly	ttc Phe	gac Asp 125	ggg Gly	ttc Phe	aag Lys	384
gaa Glu 130	atc Ile	tgc Cys	cag Gln	gat Asp	gca Ala 135	cat His	ctt Leu	gtc Val	aac Asn	aaa Lys	gtt Val 140	gtt Val	ttg Leu	aac Asn	cag Gln	432
tta Leu 145	caa Gln	acc Thr	caa Gln	gcc Ala	ccc Pro 150	aag Lys	tac Tyr	aca Thr	aag Lys 155	cca Pro	ttg Leu	gct Ala	acc Thr	ttg Leu	gcc Ala 160	480
gac Asp	gct Ala	act Thr	att Ile	gcc Ala 165	aag Lys	ttg Leu	ttc Phe	ggt Gly	aaa Lys 170	agc Ser	gag Glu	gag Glu	tgg Trp	caa Gln 175	acc Thr	528
gca Ala	cct Pro	gtc Val	tat Tyr 180	tcc Ser	aat Asn	gga Gly	ttg Leu	gac Asp 185	ctt Leu	gtc Val	aca Thr	cga Arg	aca Thr 190	gtc Val	aca Thr	576
ctc Leu	att Ile	atg Met	gtc Val	ggc Gly	gac Asp	aaa Lys	atc Ile	tgc Cys	cac His	aat Asn	gag Glu	gag Glu	tgg Trp 205	ctg Leu	gat Asp	624
att Ile 210	gca Ala	aag Lys	aac Asn	cat His	gcc Ala	gtg Val 215	agt Ser	gtg Val	gcg Ala	gta Val 220	caa Gln	gct Ala	cgc Arg	caa Gln	ctt Leu	672
cgc Arg 225	gta Val	tgg Trp	ccc Pro	atg Met	cta Leu 230	ctg Leu	cga Arg	ccg Pro	ctc Leu	gct Ala 235	cac His	tgg Trp	ttt Phe	caa Gln 240	ccg Pro	720
caa Gln	gga Gly	cgc Arg	aaa Lys	ttg Leu 245	cgt Arg	gac Asp	caa Gln	gtg Val	cgc Arg 250	cgc Arg	gca Ala	cga Arg	aag Lys	atc Ile 255	att Ile	768
gat Asp	cct Pro	gag Glu	att Ile	cag Gln	cga Arg	cga Arg	cgt Arg	gct Ala 265	gaa Glu	aag Lys	gcc Ala	gca Ala	tgt Cys 270	gta Val	gcg Ala	816
aag Lys	ggc Gly	gtg Val	cag Gln	ccg Pro	ccc Pro	cag Gln	tac Tyr 280	gtc Val	gat Asp	acc Thr	atg Met	caa Gln	tgg Trp	ttt Phe	gaa Glu	864
gac Asp	acc Thr	gcc Ala	gac Asp	ggc Gly	cgc Arg	tgg Trp 295	tac Tyr	gat Asp	gtg Val	gcg Ala	ggt Gly 300	gct Ala	cag Gln	ctc Leu	gct Ala	912
atg Met 305	gat Asp	ttc Phe	gcc Ala	ggc Gly	atc Ile 310	tac Tyr	gcc Ala	tcg Ser	acg Thr	gat Asp 315	ctt Leu	ttc Phe	gtc Val	ggt Gly	gcc Ala 320	960
ctt Leu	gtg Val	gac Asp	att Ile	gcc Ala 325	agg Arg	cac His	cca Pro	gac Asp	ctt Leu 330	att Ile	cag Gln	cct Pro	ctc Leu	cgc Arg	caa Gln	1008
gag Glu	atc Ile	cgc Arg	act Thr	gta Val	atc Ile	gga Gly	gaa Glu	ggg Gly	ggc Gly	tgg Trp	acg Thr	cct Pro	gcc Ala	tct Ser	ctg Leu	1056

350

ctc cct cat gac cgg tgc taa 1557
Leu Pro His Asp Arg Cys
515

<400> 48

Lys Trp Trp Glu Leu Thr Thr Met Arg Ala Arg Gln Asp Phe Asp Thr
50 55 60

Tyr Gly Pro Ser Trp Ile Glu Ala Trp Phe Ser Lys Asn Asp Lys Pro
 65 70 75 80
 Leu Arg Phe Ile Val Asp Ser Gly Tyr Cys Thr Ile Leu Pro Ser Ser
 85 90 95
 Met Ala Asp Glu Phe Arg Lys Ile Lys Asp Met Cys Met Tyr Lys Phe
 100 105 110
 Leu Ala Asp Asp Phe His Ser His Leu Pro Gly Phe Asp Gly Phe Lys
 115 120 125
 Glu Ile Cys Gln Asp Ala His Leu Val Asn Lys Val Val Leu Asn Gln
 130 135 140
 Leu Gln Thr Gln Ala Pro Lys Tyr Thr Lys Pro Leu Ala Thr Leu Ala
 145 150 155 160
 Asp Ala Thr Ile Ala Lys Leu Phe Gly Lys Ser Glu Glu Trp Gln Thr
 165 170 175
 Ala Pro Val Tyr Ser Asn Gly Leu Asp Leu Val Thr Arg Thr Val Thr
 180 185 190
 Leu Ile Met Val Gly Asp Lys Ile Cys His Asn Glu Glu Trp Leu Asp
 195 200 205
 Ile Ala Lys Asn His Ala Val Ser Val Ala Val Gln Ala Arg Gln Leu
 210 215 220
 Arg Val Trp Pro Met Leu Leu Arg Pro Leu Ala His Trp Phe Gln Pro
 225 230 235 240
 Gln Gly Arg Lys Leu Arg Asp Gln Val Arg Arg Ala Arg Lys Ile Ile
 245 250 255
 Asp Pro Glu Ile Gln Arg Arg Arg Ala Glu Lys Ala Ala Cys Val Ala
 260 265 270
 Lys Gly Val Gln Pro Pro Gln Tyr Val Asp Thr Met Gln Trp Phe Glu
 275 280 285
 Asp Thr Ala Asp Gly Arg Trp Tyr Asp Val Ala Gly Ala Gln Leu Ala
 290 295 300
 Met Asp Phe Ala Gly Ile Tyr Ala Ser Thr Asp Leu Phe Val Gly Ala
 305 310 315 320
 Leu Val Asp Ile Ala Arg His Pro Asp Leu Ile Gln Pro Leu Arg Gln
 325 330 335
 Glu Ile Arg Thr Val Ile Gly Glu Gly Gly Trp Thr Pro Ala Ser Leu
 340 345 350

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tgc acc ata gct att cta gct agt acc aca tac gtt gga cta ctc aaa 192
Cys Thr Ile Ala Ile Leu Ala Ser Thr Thr Tyr Val Gly Leu Leu Lys

50	55	60	
gac agc ttc ttc cat ggc ccc gca aac gtt gat aaa gca gaa tgg ggc Asp Ser Phe Phe His Gly Pro Ala Asn Val Asp Lys Ala Glu Trp Gly 65 70 75 80			240
tct ttg gtc gaa gga agt cga agc ttg atc acc ggc cca cag aat ggc Ser Leu Val Glu Gly Ser Arg Ser Leu Ile Thr Gly Pro Gln Asn Gly 85 90 95			288
tgg aag tgg cag agc ttc gac ggg gat gca gat gtt ctc gga gat ttc Trp Lys Trp Gln Ser Phe Asp Gly Asp Ala Asp Val Leu Gly Asp Phe 100 105 110			336
aac cat caa gca cta atg acc ttg gta ttc ccg ggg tca tat ggg gtt Asn His Gln Ala Leu Met Thr Leu Val Phe Pro Gly Ser Tyr Gly Val 115 120 125			384
gca tct caa gca gcc tca cca ttc ctt gct ccc ctc cct gtg aac cta Ala Ser Gln Ala Ala Ser Pro Phe Leu Ala Pro Leu Pro Val Asn Leu 130 135 140			432
tct gtg att gac ctt ccc tca acg tcg agc cct tta acc gcc tat tcg Ser Val Ile Asp Leu Pro Ser Thr Ser Ser Pro Leu Thr Ala Tyr Ser 145 150 155 160			480
aaa gat aaa gtt ttc gcc ttc tct gtg gaa tac agc agc gcg ccg gaa Lys Asp Lys Val Phe Ala Phe Ser Val Glu Tyr Ser Ser Ala Pro Glu 165 170 175			528
ctc gtg gct gct gtt caa gaa atc ccc aac aac agt gcc gac ctg aaa Leu Val Ala Val Gln Glu Ile Pro Asn Asn Ser Ala Asp Leu Lys 180 185 190			576
ttg cag gag acg caa ttg atc gag atg gaa cgc cag atg tgg atc atg Leu Gln Glu Thr Gln Leu Ile Glu Met Glu Arg Gln Met Trp Ile Met 195 200 205			624
aag gct gcc agg gct cac aca aaa cgc agc ctt gct caa tgg gtg cac Lys Ala Ala Arg Ala His Thr Lys Arg Ser Leu Ala Gln Trp Val His 210 215 220			672
gat acc tgg aca gag tct ctt gat ctt atc aag agc gct caa acg ctc Asp Thr Trp Thr Glu Ser Leu Asp Leu Ile Lys Ser Ala Gln Thr Leu 225 230 235 240			720
gac gtg gtt gtc atg gtg cta ggt tat ata tca atg cac ttg act ttc Asp Val Val Val Met Val Leu Gly Tyr Ile Ser Met His Leu Thr Phe 245 250 255			768
gtc tca ctc ttc ctc agc atg aaa aaa ttg gga tcg aag gtt tgg ctg Val Ser Leu Phe Leu Ser Met Lys Lys Leu Gly Ser Lys Val Trp Leu 260 265 270			816
gct aca agc gtc ctt ttg tcg tca aca ttt gcc ttt ctc ctc ggt ctc Ala Thr Ser Val Leu Leu Ser Thr Phe Ala Phe Leu Leu Gly Leu 275 280 285			864
gac gtg gcc ata aga cta ggg gtt ccg atg agc atg agg ttg cta tcc Asp Val Ala Ile Arg Leu Gly Val Pro Met Ser Met Arg Leu Leu Ser 290 295 300			912
gaa ggc ctc ccc ttc ttg gtg gtg atc gtt ggc ttt gag aag agc atc Glu Gly Leu Pro Phe Leu Val Val Ile Val Gly Phe Glu Lys Ser Ile 305 310 315 320			960
act ctg acc agg gct gtt ttg tcc tat gct gtg cag cac cga aag ccc Thr Leu Thr Arg Ala Val Leu Ser Tyr Ala Val Gln His Arg Lys Pro 325 330 335			1008

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cag aag ata cag tct gac cag ggt agc gtg aca gcc att gct gaa agt	1056
Gln Lys Ile Gln Ser Asp Gln Gly Ser Val Thr Ala Ile Ala Glu Ser	
340 345 350	
acc atc aat tac gcc gta cga agc gcc att cgg gag aag ggt tac aat	1104
Thr Ile Asn Tyr Ala Val Arg Ser Ala Ile Arg Glu Lys Gly Tyr Asn	
355 360 365	
atc gtg tgc cac tac gtg gtc gag atc ctg ctc cta gtt atc ggt gct	1152
Ile Val Cys His Tyr Val Val Glu Ile Leu Leu Leu Val Ile Gly Ala	
370 375 380	
gtc tta ggc atc caa ggt ggg cta cag cac ttc tgt gtt cta gct gca	1200
Val Leu Gly Ile Gln Gly Gly Leu Gln His Phe Cys Val Leu Ala Ala	
385 390 395 400	
ttg atc ctg ttc ttt gac tgt ctg ctg ctg ttt aca ttc tac act gcg	1248
Leu Ile Leu Phe Phe Asp Cys Leu Leu Leu Phe Thr Phe Tyr Thr Ala	
405 410 415	
att ctg tct atc aag ctc gag gta aac cgc ctc aaa cgt cat atc aac	1296
Ile Leu Ser Ile Lys Leu Glu Val Asn Arg Leu Lys Arg His Ile Asn	
420 425 430	
atg cgg tac gcg ttg gaa gat gag ggt ctc agt cag cgg acg gcg gag	1344
Met Arg Tyr Ala Leu Glu Asp Glu Gly Leu Ser Gln Arg Thr Ala Glu	
435 440 445	
agt gtc gcg acc agc aat gat gcc caa gac agt gca cgt aca tat ctg	1392
Ser Val Ala Thr Ser Asn Asp Ala Gln Asp Ser Ala Arg Thr Tyr Leu	
450 455 460	
ttt ggc aat gat atg aaa ggc agc agt gtt ccg aag ttc aaa ttc tgg	1440
Phe Gly Asn Asp Met Lys Gly Ser Ser Val Pro Lys Phe Lys Phe Trp	
465 470 475 480	
atg gtc gtt ggt ttc ctt atc gtc aac ctc gtc aac atc ggc tcc acc	1488
Met Val Val Gly Phe Leu Ile Val Asn Leu Val Asn Ile Gly Ser Thr	
485 490 495	
ctt ttc caa gcc tct tct agt gga tcg ttg tcc agt ata tca tct tgg	1536
Leu Phe Gln Ala Ser Ser Ser Gly Ser Leu Ser Ser Ile Ser Ser Trp	
500 505 510	
acc gaa agt ctg agc gga tcg gcc att aaa ccc ccg ctt gag ccc ttc	1584
Thr Glu Ser Leu Ser Gly Ser Ala Ile Lys Pro Pro Leu Glu Pro Phe	
515 520 525	
aag gta gct gga agt gga cta gat gaa cta ctt ttc cag gca aga ggg	1632
Lys Val Ala Gly Ser Gly Leu Asp Glu Leu Leu Phe Gln Ala Arg Gly	
530 535 540	
cgc ggt caa tcg act atg gtc act gtc ctc gcc ccc atc aag tac gaa	1680
Arg Gly Gln Ser Thr Met Val Thr Val Leu Ala Pro Ile Lys Tyr Glu	
545 550 555 560	
cta gag tat cct tcc att cac cgt ggt acc tcg cag cta cac gag tat	1728
Leu Glu Tyr Pro Ser Ile His Arg Gly Thr Ser Gln Leu His Glu Tyr	
565 570 575	
gga gtt ggt gga aaa atg gtc ggt agc ctg ctc acc agc ctg gaa gat	1776
Gly Val Gly Gly Lys Met Val Gly Ser Leu Leu Thr Ser Leu Glu Asp	
580 585 590	
ccc gtc ctc tcc aaa tgg gtg ttt gtg gca ctt gcc cta agt gtc gct	1824
Pro Val Leu Ser Lys Trp Val Phe Val Ala Leu Ala Leu Ser Val Ala	
595 600 605	
ctg aac agc tat ctg ttc aag gcc gcc aga ctg gga atc aaa gat cct	1872
Leu Asn Ser Tyr Leu Phe Lys Ala Ala Arg Leu Gly Ile Lys Asp Pro	

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610	615	620	
aat ctc ccg agt cac cca gtt gat cca gtt gag ctt gac cag gcc gaa Asn Leu Pro Ser His Pro Val Asp Pro Val Glu Leu Asp Gln Ala Glu 625 630 635 640			1920
agc ttc aac gct gcc cag aac cag acc cct cag att caa tca agt ctc Ser Phe Asn Ala Ala Gln Asn Gln Thr Pro Gln Ile Gln Ser Ser Leu 645 650 655			1968
caa gct cct cag acc aga gtg ttc act cct acc acc acc gac agt gac Gln Ala Pro Gln Thr Arg Val Phe Thr Pro Thr Thr Thr Asp Ser Asp 660 665 670			2016
agt gat gcc tca tta gtc tta att aaa gca tct cta aag gtc act aag Ser Asp Ala Ser Leu Val Leu Ile Lys Ala Ser Leu Lys Val Thr Lys 675 680 685			2064
cga gca gaa gga aag aca gcc act agt gaa ctt ccc gtg tct cgc aca Arg Ala Glu Gly Lys Thr Ala Thr Ser Glu Leu Pro Val Ser Arg Thr 690 695 700			2112
caa atc gaa ctg gac aat ttg ctg aag cag aac aca atc agc gag ttg Gln Ile Glu Leu Asp Asn Leu Leu Lys Gln Asn Thr Ile Ser Glu Leu 705 710 715 720			2160
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tat gcc cta gag aag agt ctc aaa gac tgc act cgt gcc gtc aag gtt Tyr Ala Leu Glu Lys Ser Leu Lys Asp Cys Thr Arg Ala Val Lys Val 740 745 750			2256
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gtt ggc gtc gcc ggt cct att gtt atc gac ggc aag agt tat ttc att Val Gly Val Ala Gly Pro Ile Val Ile Asp Gly Lys Ser Tyr Phe Ile 805 810 815			2448
cct atg gca acc acc gag ggc gtc ctc gtc gct agt gct agc cgt ggc Pro Met Ala Thr Thr Glu Gly Val Leu Val Ala Ser Ala Ser Arg Gly 820 825 830			2496
agt aag gca atc aac ctc ggt ggc ggt gcc gtg aca gtc ctg act ggc Ser Lys Ala Ile Asn Leu Gly Gly Gly Ala Val Thr Val Leu Thr Gly 835 840 845			2544
gac ggt atg aca cga ggc ccg tgt gtg aag ttt gat gtc ctt gaa cga Asp Gly Met Thr Arg Gly Pro Cys Val Lys Phe Asp Val Leu Glu Arg 850 855 860			2592
gct ggt gct gct aag atc tgg ctc gat tcg gac gtc ggc cag acc gta Ala Gly Ala Ala Lys Ile Trp Leu Asp Ser Asp Val Gly Gln Thr Val 865 870 875 880			2640
atg aaa gaa gcc ttc aat tca acc agc aga ttt gcg cgc tta caa agt Met Lys Glu Ala Phe Asn Ser Thr Ser Arg Phe Ala Arg Leu Gln Ser 885 890 895			2688

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atg cgg aca act atc gcc ggt act cac tta tat att cga ttt aag act	2736
Met Arg Thr Thr Ile Ala Gly Thr His Leu Tyr Ile Arg Phe Lys Thr	
900 905 910	
act act ggc gac gct atg gga atg aat atg att tct aag ggc gtg gag	2784
Thr Thr Gly Asp Ala Met Gly Met Asn Met Ile Ser Lys Gly Val Glu	
915 920 925	
cat gca ctg aat gtt atg gcg aca gag gca ggt ttc agc gat atg aat	2832
His Ala Leu Asn Val Met Ala Thr Glu Ala Gly Phe Ser Asp Met Asn	
930 935 940	
att att acc cta tca gga aat tac tgt acg gat aag aaa cct tca gct	2880
Ile Ile Thr Leu Ser Gly Asn Tyr Cys Thr Asp Lys Lys Pro Ser Ala	
945 950 955 960	
ttg aat tgg atc gat gga cgg ggc aag ggc att gtg gcc gaa gcc atc	2928
Leu Asn Trp Ile Asp Gly Arg Gly Lys Gly Ile Val Ala Glu Ala Ile	
965 970 975	
ata ccg gcg aac gtt gtc agg gat gtc tta aag agc gat gtg gat agc	2976
Ile Pro Ala Asn Val Val Arg Asp Val Leu Lys Ser Asp Val Asp Ser	
980 985 990	
atg gtt cag ctc aac ata tcg aaa aat ctg att ggg tcc gct atg gct	3024
Met Val Gln Leu Asn Ile Ser Lys Asn Leu Ile Gly Ser Ala Met Ala	
995 1000 1005	
ggc tca gtt ggc ggc ttc aac gcc caa gct gcc aat ctt gcg gca	3069
Gly Ser Val Gly Gly Phe Asn Ala Gln Ala Ala Asn Leu Ala Ala	
1010 1015 1020	
gcc att ttc att gcc aca ggt cag gat ccg gcg caa gtt gtg gag	3114
Ala Ile Phe Ile Ala Thr Gly Gln Asp Pro Ala Gln Val Val Glu	
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Ser Ala Asn Cys Ile Thr Leu Met Asn Asn Leu Arg Gly Ser Leu	
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caa atc tct gtc tcc atg ccg tct att gag gtt gga acg ttg ggc	3204
Gln Ile Ser Val Ser Met Pro Ser Ile Glu Val Gly Thr Leu Gly	
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Gly Gly Thr Ile Leu Glu Pro Gln Gly Ala Met Leu Asp Met Leu	
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ggt gtc cgc gga tca cac ccg acc act ccc ggt gag aat gca cgt	3294
Gly Val Arg Gly Ser His Pro Thr Thr Pro Gly Glu Asn Ala Arg	
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Gln Leu Ala Arg Ile Ile Gly Ser Ala Val Leu Ala Gly Glu Leu	
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Ser Leu Cys Ala Ala Leu Ala Ala Gly His Leu Val Lys Ala His	
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Met Ala His Asn Arg Ser Ala Pro Ala Ser Ser Ala Pro Ser Arg	
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agt gtc tcc ccg tca ggc gga acc agg aca gtc cct gtt cct aac	3474
Ser Val Ser Pro Ser Gly Gly Thr Arg Thr Val Pro Val Pro Asn	
1145 1150 1155	
aat gca ctg agg ccg agt gct gca gct act gat cgg gct cga cgc	3519
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1160

1165

1170

tga

3522

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 35 40 45

Cys Thr Ile Ala Ile Leu Ala Ser Thr Thr Tyr Val Gly Leu Leu Lys
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Asp Ser Phe Phe His Gly Pro Ala Asn Val Asp Lys Ala Glu Trp Gly
 65 70 75 80

Ser Leu Val Glu Gly Ser Arg Ser Leu Ile Thr Gly Pro Gln Asn Gly
 85 90 95

Trp Lys Trp Gln Ser Phe Asp Gly Asp Ala Asp Val Leu Gly Asp Phe
 100 105 110

Asn His Gln Ala Leu Met Thr Leu Val Phe Pro Gly Ser Tyr Gly Val
 115 120 125

Ala Ser Gln Ala Ala Ser Pro Phe Leu Ala Pro Leu Pro Val Asn Leu
 130 135 140

Ser Val Ile Asp Leu Pro Ser Thr Ser Ser Pro Leu Thr Ala Tyr Ser
 145 150 155 160

Lys Asp Lys Val Phe Ala Phe Ser Val Glu Tyr Ser Ser Ala Pro Glu
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Leu Val Ala Ala Val Gln Glu Ile Pro Asn Asn Ser Ala Asp Leu Lys
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Leu Gln Glu Thr Gln Leu Ile Glu Met Glu Arg Gln Met Trp Ile Met
 195 200 205

Lys Ala Ala Arg Ala His Thr Lys Arg Ser Leu Ala Gln Trp Val His
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Asp Thr Trp Thr Glu Ser Leu Asp Leu Ile Lys Ser Ala Gln Thr Leu
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Asp Val Val Val Met Val Leu Gly Tyr Ile Ser Met His Leu Thr Phe
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 Ala Thr Ser Val Leu Leu Ser Ser Thr Phe Ala Phe Leu Leu Gly Leu
 275 280 285
 Asp Val Ala Ile Arg Leu Gly Val Pro Met Ser Met Arg Leu Leu Ser
 290 295 300
 Glu Gly Leu Pro Phe Leu Val Val Ile Val Gly Phe Glu Lys Ser Ile
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 Thr Leu Thr Arg Ala Val Leu Ser Tyr Ala Val Gln His Arg Lys Pro
 325 330 335
 Gln Lys Ile Gln Ser Asp Gln Gly Ser Val Thr Ala Ile Ala Glu Ser
 340 345 350
 Thr Ile Asn Tyr Ala Val Arg Ser Ala Ile Arg Glu Lys Gly Tyr Asn
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 Ile Val Cys His Tyr Val Val Glu Ile Leu Leu Leu Val Ile Gly Ala
 370 375 380
 Val Leu Gly Ile Gln Gly Gly Leu Gln His Phe Cys Val Leu Ala Ala
 385 390 395 400
 Leu Ile Leu Phe Phe Asp Cys Leu Leu Leu Phe Thr Phe Tyr Thr Ala
 405 410 415
 Ile Leu Ser Ile Lys Leu Glu Val Asn Arg Leu Lys Arg His Ile Asn
 420 425 430
 Met Arg Tyr Ala Leu Glu Asp Glu Gly Leu Ser Gln Arg Thr Ala Glu
 435 440 445
 Ser Val Ala Thr Ser Asn Asp Ala Gln Asp Ser Ala Arg Thr Tyr Leu
 450 455 460
 Phe Gly Asn Asp Met Lys Gly Ser Ser Val Pro Lys Phe Lys Phe Trp
 465 470 475 480
 Met Val Val Gly Phe Leu Ile Val Asn Leu Val Asn Ile Gly Ser Thr
 485 490 495
 Leu Phe Gln Ala Ser Ser Ser Gly Ser Leu Ser Ser Ile Ser Ser Trp
 500 505 510

Val Leu Gly Ala Cys Cys Glu Asn Val Ile Gly Tyr Met Pro Val Pro
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Val	Gly	Val	Ala	Gly	Pro	Ile	Val	Ile	Asp	Gly	Lys	Ser	Tyr	Phe	Ile	805	810	815
Pro	Met	Ala	Thr	Thr	Glu	Gly	Val	Leu	Val	Ala	Ser	Ala	Ser	Arg	Gly	820	825	830
Ser	Lys	Ala	Ile	Asn	Leu	Gly	Gly	Gly	Ala	Val	Thr	Val	Leu	Thr	Gly	835	840	845
Asp	Gly	Met	Thr	Arg	Gly	Pro	Cys	Val	Lys	Phe	Asp	Val	Leu	Glu	Arg	850	855	860
Ala	Gly	Ala	Ala	Lys	Ile	Trp	Leu	Asp	Ser	Asp	Val	Gly	Gln	Thr	Val	865	870	880
Met	Lys	Glu	Ala	Phe	Asn	Ser	Thr	Ser	Arg	Phe	Ala	Arg	Leu	Gln	Ser	885	890	895
Met	Arg	Thr	Thr	Ile	Ala	Gly	Thr	His	Leu	Tyr	Ile	Arg	Phe	Lys	Thr	900	905	910
Thr	Thr	Gly	Asp	Ala	Met	Gly	Met	Asn	Met	Ile	Ser	Lys	Gly	Val	Glu	915	920	925
His	Ala	Leu	Asn	Val	Met	Ala	Thr	Glu	Ala	Gly	Phe	Ser	Asp	Met	Asn	930	935	940
Ile	Ile	Thr	Leu	Ser	Gly	Asn	Tyr	Cys	Thr	Asp	Lys	Lys	Pro	Ser	Ala	945	950	960
Leu	Asn	Trp	Ile	Asp	Gly	Arg	Gly	Lys	Gly	Ile	Val	Ala	Glu	Ala	Ile	965	970	975
Ile	Pro	Ala	Asn	Val	Val	Arg	Asp	Val	Leu	Lys	Ser	Asp	Val	Asp	Ser	980	985	990
Met	Val	Gln	Leu	Asn	Ile	Ser	Lys	Asn	Leu	Ile	Gly	Ser	Ala	Met	Ala	995	1000	1005
Gly	Ser	Val	Gly	Gly	Phe	Asn	Ala	Gln	Ala	Ala	Asn	Leu	Ala	Ala		1010	1015	1020
Ala	Ile	Phe	Ile	Ala	Thr	Gly	Gln	Asp	Pro	Ala	Gln	Val	Val	Glu		1025	1030	1035
Ser	Ala	Asn	Cys	Ile	Thr	Leu	Met	Asn	Asn	Leu	Arg	Gly	Ser	Leu		1040	1045	1050
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